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ORIGINAL ARTICLES.

ON THE NATURE OF INFLAMMATION, AND ESPECIALLY THE PRODUCTIVE INFLAMMATIONS OF CONNECTIVE TISSUE.[1]

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SEVERAL years ago I became convinced that the usual conception of inflammation, the nature, interpretation and sequence of the processes and their significance, was not only incomplete and far from satisfactory, but was based upon essentially false views. There is no better evidence of the incompleteness of our knowledge of this subject than the inability to define the process or describe it in any way that will give any idea of its nature, lesions, signs and symptoms, or terminations. It is often defined by attempting to describe the cardinal signs and symptoms, and we soon find that these signs and symptoms are not only not peculiar to or characteristic of inflammation, but are entirely absent in many of the forms of disease that are called inflammatory.

Cornil and Ranvier define inflammation as "a series of phenomena observed in the tissues or organs analogous to those produced artificially in the same parts by the action of a physical or chemical irritant." Nothing could be more unsatisfactory than this definition, as it simply defines the process by likening it to another of the same kind. Delafield and Prudden say of inflammation: "The conditions of our knowledge are not such as to admit of an exact definition of the term inflammation; nor is there an entire agreement concerning the number of morbid changes to which this term may be applied. We have to be contented with describing the conditions which are probably of an inflammatory character." It is unnecessary to quote other definitions of inflammation in support of the foregoing remarks.

For some time there has been a tendency among some pathologists to consider inflammation from an evolutional standpoint and to regard some aspects of it as conservative. It seems to me that inflammation in all its aspects is to be regarded as essentially conservative or reparative.

[1] Read before the N. Y. Clinical Society, April, 1891.

No attempt will be made to consider the subject exhaustively and in this paper I wish only to throw out a few suggestions, especially on one form of inflammation. I would add that these suggestions represent the aspects of the process that I have attempted to present in teaching this subject during the last three or four years, and I have been more and more impressed in practical experience with the essential truth of the conception, and have been greatly encouraged by the readiness with which students grasp it and put it to practical proof and use.

Since I arrived at the conclusion here enunciated in part, there has been a general tendency among many pathologists toward the acceptation of similar views.

My attention was directed to this subject some years ago by Dr. C. Pittfield Mitchell, to whose writings I feel deeply indebted, although his views differ widely from my own, and I shall introduce my remarks by an extract from his work on *Evolution and Dissolution and the Science of Medicine*: "Single living particles or their assemblages as tissues, organs and compound individuals, present us with a conservative system of forces."

I presume no one will question this proposition. Following this thought a little further it may be said that a disturbance in the equilibrium of these forces produced by external agencies constitutes disease. Now, a readjustment of the equilibrium between these forces, constituting a return as nearly as possible to the normal condition, is in many cases brought about by the processes of inflammation. These processes then become conservative, as are the forces from which they are developed.

I would therefore define inflammation as *the conservative reaction of the organism to noxious influences, brought about through changes in some portions of the vascular system and the connective tissues.* It is Nature's method either of repair or of protecting the organism from noxæ and limiting their action. Its clinical and anatomical features vary and depend upon the nature, mode of application, intensity and duration of action of the noxæ. These noxæ are derived directly or indirectly from without the organism.

The cells and tissues of a compound organism physiologically perform certain functions, and the inflammatory processes are but new functions assumed by certain of these cells and tissues, these

new functions being developed as the result of a morbid condition or a disturbed equilibrium. *Inflammation has always to do primarily with the vascular system and connective tissues.* One of the functions of the vascular system is to supply substances for the nutrition of old tissues and the building up of new tissues. Another function, I believe, is the protection of the organism from the effect of noxious influences acting upon it, these noxæ being derived from without. This latter function is accomplished through the various processes of what we call inflammation. *Inflammation then is only the reaction of the vascular system and its associated tissues (connective tissues) to various noxious influences.* This reaction is essentially conservative, and represents in a general way the most complete protection of the organism or its parts possible under the conditions. The phenomena of inflammation in themselves form only the visible manifestations of the reaction. These manifestations vary in their macroscopical and microscopical appearances according, first, to the nature of the noxæ and their influence on the organism; and, second, according to the ratio existing between the resisting power of the organism and the noxæ. As an illustration of the first proposition we may cite changes occurring in an acute suppurative inflammation as compared with those occurring in a tuberculous inflammation. The differences are quite constant, and depend upon the difference in the nature of the noxæ and their influences on the organism. An illustration of the second proposition may be found in different tuberculous inflammations; in one form, for example, the resistance of the organism to the noxæ is great and the formation of fibrous connective tissue predominates in the process, and in another the resistance of the organism is slight and little connective tissue is produced—the process extends rapidly and suppuration occurs.

It will at once be seen that if this conception of the process is a true one, before we can obtain any correct appreciation of inflammation we must entirely revise our views of the nature of the process, and our instinctive interpretation of the term inflammation. We now regard the inflammatory processes as being in themselves the morbid processes and not as being merely the outward manifestations of Nature's methods of protection or repair. It would be far easier to form a true conception of the nature of the process if we could change its name and call it, for example, *conservation* in place of inflammation. Then the name itself would suggest a preservative rather than a destructive process. It may be easily seen how indistinct and ill-defined the conception of the older pathologists was by the kinds of processes utterly different in nature that they classed together as inflammatory.

I do not propose to take up the consideration of all the forms of inflammation, as this would require far too much time. As to the acute forms, I shall in passing only say a word regarding acute suppurative inflammation. Several of the recent writers, and notably Bland Sutton, have called attention to the essentially conservative nature of suppuration, and this may be demonstrated experimentally with much exactness. One phase of this has been brought out by the researches of Metschnikoff on phagocytosis. The evidence regarding the conservative nature of this phase of inflammation is exceedingly strong.

I shall limit further my remarks to one form of inflammation, viz., the productive inflammation of the connective tissues. It is simply impossible from the old standpoint to explain rationally or intelligently the various conditions under which the productive inflammations of connective tissue occur. There is one reason assigned for their production in one organ in one disease and quite a different one for their appearance in another organ in another disease. It is impossible to harmonize the various theories with the facts or with each other, and yet, the anatomical changes are practically the same wherever the process is found. The conditions under which the affection appears in different situations are also nearly the same, and it would seem as if there must be some ground upon which all should meet. How little these processes were associated together in the minds of the earlier workers is clearly shown by the nomenclature. A student of medicine would little think that the small granular kidney of chronic renal disease, the liver in cirrhosis, the lung in fibroid induration, the heart in interstitial myocarditis, the stomach in gastric cirrhosis, and the brain and spinal cord, in the various forms of sclerosis, all exhibit practically the same anatomical changes in structure.

It is a well-known fact that knowledge becomes simplified as it advances, and it is found possible to group large collections of observations under few heads. That there is some principle that will satisfy all the conditions under which there is a new production of connective tissue, it seems to me, cannot be questioned. The problem presented is to find what this principle is. Another consideration has force in this relation, and that is, that there are strong reasons to regard not inflammation alone but every general pathological process as essentially conservative, and to regard the anatomical lesions of disease as representing, as a whole, the best results, so far as the organism is concerned, that Nature can produce under the existing conditions. The structural changes found in disease should therefore not in themselves be considered as representing morbid processes, but as only representing the injury that

the organism has sustained in its contest with noxious influences. They should be considered as in a general way representing the most favorable reaction between the organism and the external forces acting upon it. It seems probable that the reason we have such processes as inflammation reproduced in practically the same form in various organs and tissues in different species of animals, and in man, is because, in the process of evolution, these reactions to certain external forces conserved to the greatest possible extent the organism acted upon, and were preserved and transmitted to the offspring by a process of natural selection.

The conception of the productive inflammation of connective tissue that I put forward represents the process as being always secondary and as essentially conservative or reparative, and it rationally explains a very large proportion of all the conditions under which productive inflammations occur. Those conditions which apparently cannot be explained now in accordance with this conception will, I believe, admit of explanation when we know a little more of the nature of the process.

We will rapidly take up some of the conditions under which there are new formations of connective tissue, and apply to them the test of this conception.

The first condition under which we have a formation of connective tissue is in the repair of losses of tissue substance or of wounds. When the tissue lost is considerable in amount, unless it is one of the connective tissues, the organism does not reproduce it in kind—or, in other words, when any considerable amount of parenchyma is destroyed it is not reproduced, but its place is taken by fibrous connective tissue. The formation of this tissue is essentially the same under all conditions. There is, of course, no question about the conservative nature of the formation of scar-tissue in the repair of wounds, and it evidently conforms to the definition, "the conservative reaction of the organism to noxæ."

When a foreign body of any kind is introduced into the organism, or when some portion of tissue loses its vitality and so comes to act as a foreign body, there occurs around it a so-called reactive inflammation, associated with the formation of connective tissue. If the foreign body is composed of inorganic matter, as, for example, a bullet, it simply becomes encapsulated, shut off from the rest of the organism and thus rendered harmless. If, on the other hand, the foreign body is organic matter, as a portion of dead tissue for example, not only does it become encapsulated, but it undergoes completely, or in part, what is improperly called organization, *i. e.*, a replacement by fibrous tissue. Capillary loops are pushed into the mass from the vessels in the surrounding newly formed connective tissue. These carry with them round embryonic cells and extend deeper and deeper into the mass. Gradually the mass becomes completely vascularized and as this process goes on the mass is disintegrated and the products of disintegration are carried off. The embryonic cells undergo the usual developmental changes and a scar-tissue is finally formed. Then, depending upon the completness of the process, we find at the point either a simple cicatrix or a cicatrix with the encapsulated and partially disintegrated remains of the original mass. The process that occurs in and around an infarction, a blood-clot situated in the tissues, or a thrombus, is essentially this process. The formation of cysts in the brain after cerebral hemorrhages is, of course, of the same nature—the occurrence of a cyst in the place of a cicatrix being due to the air-tight space in which the brain is situated. The process in each of these cases is evidently conservative; it is Nature's method of separating the dead tissues from the living and of removing the remains of the dead tissues.

The organization of fibrinous exudations is another illustration of the same process—when, for example, on the opposed surfaces of the pleura a fibrinous exudation is deposited; if these surfaces are in contact they are at first agglutinated together; then, as the exudation is dead tissue and acts as a foreign body, there is set up the same kind of a process as occurs around other organic foreign bodies, and it results in the vascularization, disintegration and absorption of the exudation and the formation of adhesions between the surfaces of the serous membranes. The formation of connective tissue here is evidently in response to the same conservative tendencies as in the previous instances.

In the interstitial inflammation in the various viscera the formation of connective tissue is not *primary* but always *secondary*, and is produced in accordance with the same conservative or reparative tendencies that we have seen exhibited in the production of connective tissue under other conditions. The primary change in these processes is in the parenchyma of the organ and is degenerative in character. Nature endeavors to replace the tissue destroyed, but under most conditions does not reproduce the parenchymatous cells, and, in the effort at repair, produces in their place connective tissue. As bearing upon the sequences of the processes in this connection, I may quote from *Evolution and Dissolution*, etc., by C. Pittfield Mitchell, a corollary of Spencer's views of evolution and dissolution:

"Incident forces being equally distributed among the elements of an organic system, the dissolution of functions and structures follows the opposite order of their evolution; the higher and accessory

are less stable than the lower and fundamental; in other words, the more widely cells are separated from the simple fundamental types the more unstable they are. As cells become more highly differentiated and specialized, by just so much do they become susceptible to all forms of noxious influences, or the resistance is inversely proportional to the degree of their specialization and differentiation. This is a principle that needs no elaboration."

Thus we find from an embryological and evolutional standpoint ample confirmation of this conception as to the sequence of the processes. We will now follow it out more in detail in some of the different organs. There can be no doubt that most, if not all, chronic interstitial inflammations are hematogenous in character; they are produced by some noxious influence reaching the organs through the blood. It is thus perfectly illogical to assume that the stable and fundamental connective tissue of an organ first reacts to the depressant, while the highly functionated and differentiated cells of the parenchyma are unaffected. The connective tissues are fundamental, are least differentiated and specialized, and they form the supporting structures of the body.

The connective tissues that are affected in the chronic interstitial inflammations are practically the same throughout the body, and under most conditions certainly are acted upon alike by any noxious influence that reaches them through the blood-current. On the other hand, the parenchymatous tissues are specialized and thus more unstable and less resistant, and they are also subjected in different degree to any noxious influence depending upon the nature of their own function. The kidneys, for example, would be exposed to injury in a much greater degree than would be the case with the liver if there was an excess of the normal urinary excretions in the urine or the presence of some abnormal constituent that is excreted by the kidneys, for the cells of the kidney would then be tried in the performance of their function.

The connective tissue of the liver and kidney, however, might primarily be exposed in nearly or quite the same degree. If we consider for a moment the explanation of the occurrence of cirrhosis hepatis as resulting from alcohol, we see this again well shown. The alcohol passing into the stomach is taken up by the gastric derivatives of the portal vein. It passes with the portal blood to the liver, and coming in contact with the connective tissue of the liver gives rise to proliferation. This is the usually accepted explanation. Let us see how rational it is. There are in the liver, as in other parenchymatous organs, the two forms of tissue—the simple, fundamental and stable connective tissue, and the very highly differentiated and specialized liver-cells. These two kinds of tissue are susceptible to noxious influences in a degree proportionate to their specialization. Yet we are asked to believe that the liver-cells are affected for the most part secondarily, notwithstanding the fact, first, that it is largely a part of their function to dispose of the alcohol, and second, that they are very highly specialized; further, we must believe that the stable connective tissue of the organ has less resistance to the noxious influences than have the liver-cells; and hence, proliferation of the interstitial tissue occurs in response to the irritation. This we are asked to believe, notwithstanding the fact that the connective tissue is for the most part supplied with blood from the hepatic artery, which contains no more alcohol than blood in any other vessel of the body, and notwithstanding the fact that the portal blood containing the injurious alcohol is distributed directly to the liver-lobule and not to the connective tissue. It seems to me that reason and logic have not come into play in this explanation. The new growth of connective tissue here is to be explained in accordance with the theory already enunciated, viz., that the alcohol causes a degeneration of the liver-cells in the periphery of the lobules diffusely throughout the organ, and as the organism does not reproduce them in the attempt at repair, a new connective tissue is produced. It appears to me that there can be no question about the sequence of the processes, although I am aware that some pathologists have regarded it as impossible on anatomical grounds to explain the lesions in this way. The conservative function of the newly formed connective tissue, I admit, cannot now be explained, either in the liver or in some of the other parenchymatous organs, but I doubt very much whether it is as injurious as it is believed to be, and it is formed in accordance with a general method of repair. Nature does not deal with special cases, but with general principles.

We take another illustration. If a considerable portion of muscular tissue is destroyed subcutaneously and aseptically, the muscle is only in part, if at all, reproduced, and its place is taken by newly formed connective tissue. Now, if in place of this a few fibers of the heart-muscle at numerous points in the walls atrophy, degenerate and disappear, as the result of a partial or complete obliteration of some of the smaller branches of the coronary arteries, these muscular fibers are not reproduced, but their place is taken by newly formed connective tissues, and this process of new formation constitutes diffuse interstitial myocarditis. In a large proportion of instances of interstitial myocarditis, the first change is in the coronary arteries. Disease of these leads to obstruction of their lumen, and ischemia of the part supplied; the ischemia results in degeneration. Now, if this degenerative

process went on to any extent, without an associated reparative process, the muscular walls would be destroyed to such an extent that rupture would inevitably occur. But Nature endeavors to repair the injury, and produces fibrous tissue in place of the destroyed muscle, and thus for a long period, and perhaps until the natural end of life, protects the organism from the results that would otherwise have followed—degeneration of the parenchyma. In this instance there can be no question about the sequence of events: the change in the parenchyma is first, and there can be no doubt about the reparative and conservative nature of the process, as it makes possible the continuance of function.

In interstitial nephritis the same sequence of changes occurs. The changes in the kidney are due to the presence of some noxæ in the blood. These noxæ may be the products of over-eating and drinking or of some other poisons that in their excretion act upon the epithelium of the convoluted tubes, and produce a degeneration of them. Following this change there is a secondary new-formation of connective tissues reparative in nature. Most pathologists now admit that in renal cirrhosis the process begins in the secreting portion of the organ, the tubules of the cortex, and that the connective-tissue formation is secondary.

In interstitial pneumonitis or fibroid induration of the lungs, the same explanation holds good. Interstitial pneumonitis, when not associated with tuberculosis, is the result of the inhalation of large numbers of minute particles, such as coal-dust, etc. As we have seen, whenever foreign bodies are introduced into the tissues the organism attempts to render them innoxious either by absorption or encapsulation. In accordance with this tendency there results from the presence of very large numbers of minute foreign particles a diffuse interstitial new-formation.

In the vascular system again, the conservative secondary new-formation of connective tissue is well shown. When there is disease of the arteries producing a degeneration of the middle coats, a new-formation of connective tissue takes the place of the destroyed parenchymatous elements in the muscle and the elastic fibers, as is the case in the heart. In the arteries too, as in the heart, in many cases the cause of the primary degeneration is a disease of the vessels—in this case of the vasa vasorum. The conservative nature of this formation is manifest. When the middle coat is destroyed and the formation does not occur, dilatation and aneurismal formations frequently follow. Another characteristic example of this conservative new-formation occurs in the production of connective tissue in aneurismal sacs. It is not uncommon to find in large aneurisms that the whole of the sac-wall is composed of newly formed connective tissue.

The fibrous new-formations occurring around the infectious new-growths are striking examples of this process. We have learned that in a large proportion of cases of tuberculosis the disease becomes self-limited and restricted to narrow boundaries. This is brought about by the new-formation of connective tissue around individual tubercles or tuberculous masses. The amount of formation of this depends apparently upon the individual resistance to the tuberculous poison. When it is great the tubercle or tuberculous inflammatory products (formed in accordance with the same principle), including the tubercle bacilli, are surrounded by a new fibrous connective-tissue formation, and are thus shut off from the rest of the organism. The frequent localization of tuberculous processes is always the result of such a formation.

I shall refer, finally, very briefly to the sclerosis that occurs in the systemic diseases of the spinal cord. That the new connective-tissue formation in these instances is secondary is now, I think, generally admitted. It is quite impossible to explain the occurrence of a posterior sclerosis, for example, on any other ground than that of a primary degeneration in tracts of nerve fibers which have a certain function. There could be no possible explanation for the occurrence of a new-growth of connective tissue confined to a narrow tract running longitudinally through the cord, when the connective tissue in all parts of the cord is essentially the same. Here, as in the other cases cited, the degeneration is first and the connective-tissue new-formation is secondary, and represents the organism's effort at repair.

With this very imperfect presentation of my conception of the nature of inflammation, and especially the productive inflammations, I will conclude with only a repetition of the view already enunciated, viz., that inflammation pertains alone to the vascular system or the connective tissues, and in all its forms is essentially a conservative process, representing the reaction of the organism to noxæ. It is Nature's method of repair or of destroying or of rendering inert noxious influences. The productive inflammations of connective tissue elucidate in a most characteristic way the truth of this conception, and are to be regarded as being always secondary and as reparative or conservative. The so-called interstitial inflammations should, then, be considered as primarily and essentially degenerations.

Dr. Felix Skutsch, docent in gynecology, has been elected Professor extraordinary at the University of Jena.

RECENT ADVANCES IN THE TREATMENT OF SYPHILIS.

BY CHARLES SZADEK, M.D.,
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IN a lengthy review of the present aspect of the treatment of syphilis, Prof. Kaposi,[1] of Vienna, states that the primary sore, whether hard or soft, is best treated with mercurial plaster. He does not favor excision. Anti-syphilitic treatment should only be instituted when the roseola appears; immediate treatment only delays the constitutional symptoms and has frequently been found to be followed by cerebral symptoms. Kaposi regards inunction as an unscientific, but most efficacious, method of treatment. He recommends subcutaneous injections of soluble preparations of mercury as more scientific and exact. He is decidedly opposed to the hypodermatic introduction of insoluble compounds of mercury, chiefly because they are but slowly absorbed; and if symptoms of mercurialism appear, the mercury stored in the tissues cannot be at once removed in order to arrest the stomatitis or other complications. Iodine and sulphur baths are recommended as protective against relapses after primary relief of the symptoms; hydropathic measures generally are valuable in after-treatment. On the whole, syphilis is characterized as being "eminently curable," though individual predisposition to tuberculosis and other diseases naturally affects the prognosis.

In a valuable paper, read before the neurological section of the Tenth International Medical Congress, at Berlin, Julius Althaus,[2] of London, laid down the following rules in the treatment of syphilis of the nervous system. He considered the prophylactic treatment of nerve-syphilis highly important, as the maladies of this group are among the gravest with which we have in practice to contend, they having no tendency to spontaneous improvement or cure, but a strong tendency to deterioration and death; and, even if judiciously treated, being extremely liable to sudden and severe relapses. He divided prophylactic treatment under two heads, and recommended the excision of the primary sore whenever practicable, in order to destroy the virus in its incipiency or at least to greatly attenuate it, and a mercurial treatment for about three months after the appearance of secondary symptoms. According to his experience, mercury, given efficiently at this stage, acts as a true germicide, leaving the patient's constitution uninjured, as if he had never had the disease. If no such treatment has been followed, there is in any case the possibility, and when there exists a neurotic tendency even a great probability, of the nervous system eventually becoming affected, more especially when such exciting causes as anxiety, grief and excitement, fatigue and privations, exposure to wet and cold, injuries to the head, alcoholic and sexual excesses, and hard intellectual work come into play. Althaus found that a neurotic tendency existed in more than half of his cases, and recommends, after the mercurial course is finished, bracing up by every means in one's power the nervous system in patients that have had syphilis, so as to enable them to resist the inroads of the disease on that system. For the curative treatment of nerve-syphilis he considers the periodical and long-continued hypodermatic injection of small doses of a non-irritant, insoluble preparation of mercury the most important remedy. He passed in review the several modes of employing the metal which have hitherto been in use, and recommends what he terms "carbolized mercurial cream," a preparation that consists of metallic mercury rubbed up with lanolin and afterward mixed with a certain proportion of carbolized oil. He claims for this preparation the following advantages: perfect homogeneity of the mass; great stability; painlessness of injection; absence of swelling and abscesses; great efficiency in truly specific lesions; and absence of the risk of stomatitis and dysentery, if a certain dose be not exceeded. Dr. Althaus discussed the therapeutic value of iodide of potassium, general tonics, the constant galvanic current, and the application of cold and other agents in the treatment of nerve-syphilis. He considers the galvanic current a most important remedy for ordinary secondary lesions and for relieving certain distressing symptoms. He concluded his paper with the hope that the prognosis of these affections in general will eventually become more favorable as the principle of treatment is better understood and more energetically carried out at the beginning.

In selecting a mercurial preparation, in the internal treatment of syphilis, the choice naturally should fall upon such a one as acts with sufficient energy to cause a prompt involution of the manifestations, without unduly irritating the gastro-intestinal tract or affecting the economy in general.[1] Petrini believes that tannate of mercury answers these requirements in a high degree. He employed this preparation in a series of 200 cases of syphilis, and obtained very favorable results. It seemed possible to give it for any length of time without disturbance of the general health. Petrini has found that the drug is mainly eliminated in the saliva, and only to a small extent in the urine. In cases in which three grains were given daily for a protracted period, and in

[1] Wiener medizinische Presse, 1890, 23, 24, 25, 26, 27, 28, 29; Provincial Medical Journal, 1890, 108.

[2] Julius Althaus: Treatment of Syphilis of the Nervous System. London, 1890, p. 35.

[1] Wiener medizinische Presse, 1890, 1, pp. 14-16.

which the urine contained 0.00034 per cent. of mercury, not the slightest affection of the mouth was observed. A pill, containing two-thirds of a grain of tannate of mercury made up with extract of gentian, is ordered once a day with a meal; after ten days or a fortnight the dose is doubled. The patient is treated in this way for twenty-five or thirty days, until the symptoms of the disease have passed off.

Büchler[1] recommends the internal administration of the salicylate of mercury in the treatment of syphilis; having used this drug in thirty-two cases, all of which presented the earlier phases of the disease, he is well satisfied with the results obtained. The ordinary dose prescribed was one-third of a grain, in pill or tablet form, three times a day; this caused not only a rapid involution of the cutaneous manifestations, but also in a like degree that of those of the mucous membranes. Only in three cases was the course of treatment attended by symptoms of mercurialism (in the first case a slight stomatitis was observed after twenty pills had been taken, and in two cases diarrhea supervened after thirty-six and fifty pills, respectively, had been taken). According to Büchler, salicylate of mercury bears the closest analogy to the protiodide of mercury, over which, however, it apparently possesses the advantage of being better tolerated by the gastro-intestinal tract; on enlargement of the spleen the salicylate exerted a most favorable action; on the other hand, it appears to be slower than the protiodide in reducing enlargements of the lymphatic glands. In five cases in which, with the onset of secondary symptoms, percussion showed an increased area of splenic dulness, a perceptible diminution in size was noted after a course of treatment with salicylate of mercury was instituted.

Personally I have used the salicylate of mercury in a series of cases of secondary syphilis, and with most favorable results. I gave it internally in the form of pills, and it was well borne and did not interfere with digestion; in some cases the treatment was continued for six or eight weeks without producing colic or other disagreeable symptoms. The daily amount of the salicylate of mercury that I have prescribed internally for adults has usually varied from one-half to two grains; this was frequently continued two or three months without increase or interruption, or any evidence of tolerance. The ordinary dose of from one-fourth to one-half grain is repeated two or three times daily. The therapeutic effect in all cases was perfectly satisfactory. The eruption began to fade in the course of from eight to twelve days, and the cure was completed in, on an average, from thirty to forty days.

In France a new method of treatment of syphilis has been recommended by Quinquaud:[1] 1000 grams (32 ounces) of calomel are rubbed up with 300 grams (9⅓ ounces) of castor-oil, and mixed with 3000 grams (96 ounces) of diachylon plaster. This mass is spread upon linen so as to yield 14 strips each 3 meters (9 feet) long by 0.20 (7¾ inches) wide; a square of 2½ inches contains about 18 grains of calomel. The skin having been washed with soap, the plaster is applied in the region of the spleen every eight or ten days. Mercury can be detected in the urine on about the fourth day of the application. The method is clean and efficient. Quinquaud has seen papulo-tubercular syphilides resolve in from eight to fifteen days.

The next notable step in advance in the therapeutics of syphilis was in the employment of hypodermatic or intra-muscular injections of mercurial preparations. The subject of the hypodermatic treatment of syphilis with various soluble and insoluble salts of mercury has lately attracted considerable attention among modern syphilographers. The relative advantages and disadvantages of this method of treatment, as well as the employment of new preparations of mercury, has been a theme of liveliest discussion before learned societies; a number of contributions have recently been made upon this subject. The hypodermatic or intra-muscular administration of insoluble preparations of mercury, already a favorite method with some physicians of the old world, has quite lately also received the attention of eminent American specialists.

Moncorvo,[2] of Rio de Janeiro, has employed the hypodermatic administration of the following substances in the treatment of hereditary syphilis: Calomel, yellow oxide of mercury, gray oil, and the salicylate of mercury. The vehicle used for these agents was liquid vaselin. Calomel, the oxide and the salicylate were administered in doses of from 3 to 5 centigrams (½ to ¾ grain); gray oil was used in the proportion of from ½ to 1 cubic centimeter (♏ vijss–xv). The last was better tolerated than all the others, the injection being attended and followed by no pain. Moncorvo says that the results did not quite equal his anticipations; that is to say, although beneficial, the hypodermatic injections, although administered at very short intervals (from four to ten days), did not seem to bring about a complete cure as rapidly as one would be inclined to expect. No toxic symptoms, however, were observed. Moncorvo concludes that in a general way

[1] A. F. Büchler: "On the Value of Salicylate of Mercury in the Treatment of Syphilis." Journal of Cutan. and Genito-urinary Diseases, 1890, 5. pp. 174–175.

[1] Bulletin de la Société Française de Dermatologie et de Syphiligraphie, 1890, I. 1, pp. 63–69; British Journal of Dermatology, May, 1890.

[2] Satellite, February, 1890, pp. 110, 111.

this method is less active than that of friction with unguentum hydrargyri.

Herman Klotz,[1] of New York, in a most interesting and valuable paper, related the results of a series of therapeutic experiments made by him with different insoluble mercurial preparations; calomel, the yellow oxide, and the salicylate of mercury were all tried, but the yellow oxide, in the strength of 1 to 30, suspended in water, olive oil, or vaselin, was mostly used. Two hundred and four intra-muscular injections, distributed in thirty-eight series (which were separated by intervals of several weeks or months), had been given twenty different patients. An average of ten injections was given each patient. The greatest number of injections made on any one patient was twenty-four; the smallest, three. As a rule the treatment was well borne; the pain was usually of but moderate intensity. In two cases abscesses were noted, both following an injection of calomel suspended in water; none followed when calomel was suspended in oil. Occasionally slight induration was noted at the seat of the injection. Salivation was absent in almost all cases; the gums suffered much less than during internal treatment or during a course of inunctions. Only in one case did a severe stomatitis develop. Diarrhea, as a result of the injections, was observed but once; in two cases the symptoms of pulmonary embolism were observed, but without any dangerous consequences.

The therapeutic effects of the treatment were in general very satisfactory: the early muscular and papular syphilides disappeared rapidly after two or three injections, and, as a rule, had left no trace when the last injection of the series was made; the tubercular syphilide was at first most favorably influenced by the yellow oxide, but the effect was not lasting; after early recurrence the iodide proved more useful, though it would not prevent the formation of a gummatous periostitis several months later. The affections of the mucous membrane of the oral cavity and the throat were not less favorably influenced by the treatment than those of the skin; even the deeper ulcerations healed rapidly. But in two instances new ulcerations on the posterior wall of the fauces were seen to develop during the period of injection, so that iodine had to be substituted. In the two cases of tertiary syphilis the effect of calomel injections was most satisfactory. Klotz says that there is, however, a great difference in the effects of the different salts, calomel undoubtedly taking first rank and exerting a much more powerful action than the yellow oxide and the salicylate of mercury. It seems that the effects depend, to a certain degree, on the quantity of metallic mercury contained in the salt, a larger number of injections being required as the salt contains a smaller percentage of mercury. In accordance with the observations of Jadasohn and Zeising, Klotz found that while seldom more than four injections of calomel were necessary, six to eight of the yellow oxide and of the salicylate were required to obtain the same results. Klotz concludes that the treatment of syphilis with injections of insoluble mercurial salts is most valuable.

On the continent of Europe the various hypodermatic methods of treating syphilis are at present the order of the day. The number of mercurial salts employed for this purpose continues to multiply, some observers giving preference to the soluble, others to the insoluble, preparations. Those which appear to be receiving most attention just now are hydrargyrum salicylicum, thymolo-aceticum, and benzoicum. The salicylate has recently been reported favorably upon by Gold, Lindeborn, and Lezius.

Gold, of Odessa,[1] claims to have treated 302 cases of syphilis by subcutaneous injections of different insoluble mercurial salts, and to have made 1609 injections without producing a single abscess; infiltrations occurred in four cases. He believes that the salicylate of mercury is altogether the best insoluble preparation of mercury for hypodermatic administration in syphilis.

Lindeborn,[2] of Frankfort-on-the-Main, has employed the salicylate of mercury in the treatment of syphilis in the following solution: Hydrargyri salicylatis, one part; paraffini liquidi, ten parts. The injections were made every five days. The therapeutic results obtained were most satisfactory.

Lezius,[3] of Dorpat, has recently published a paper upon the treatment of syphilis by injections of salicylate of mercury, in which he claims to have obtained favorable results with this preparation. He has employed this remedy in twenty-four cases of secondary and in only one of tertiary syphilis. The formula that he employs consists of one part of the salicylate of mercury and ten parts of liquid vaselin. The injections are usually made every seven days in the gluteal region. Twenty-five patients had received one hundred and twenty-six injections. He found that usually after two or three injections had been made, exanthematous eruptions commenced to disappear, while after the fourth or fifth injection the broad condylomata were well cured. Recent syphilitic manifestations required usually only from three to six injections. In a case of cerebral syphilis

[1] H. G. Klotz: "Clinical Observations on Intra-muscular Injections of Insoluble Mercurial Salts in Syphilis." Journal of Cutan. and Genito-urinary Dis., 1890, 2, 3, 4. pp. 41–49, 98–103, 133–138.

[1] Transact. of the Medical Association of Odessa, April 14, 1890.

[2] Therapeutische Monatshefte, 1890, 4, p. 519.

[3] St. Petersburger medicinische Wochenschrift, 1891, 4.

he claims to have obtained a remarkable curative result, the symptoms rapidly disappearing after four injections of the drug. Finally, Lezius claims that the injections have never been followed by any local inflammatory action, no abscess or toxic symptoms, while stomatitis occurred but rarely, and was in no case severe.

Personally, I have employed intra-muscular injections of salicylate of mercury in a long series of cases of secondary and tertiary syphilis, and always with most satisfactory results. The solution used was as follows:

℞.—Hydrarg. salicylatis . . gr. xvj–xxiv.
Mucilag. gummi arabici . gr. viij.
Aquæ destillatæ . . . fʒvss.
M. ft. suspension.

Of this, one Pravaz syringeful (ɱxv) was injected at a time; this was repeated at intervals of three days. I selected the gluteal region as the site for injections. The time during which the cases were treated varied from three weeks to two months. The therapeutic value of the salicylate of mercury was especially remarkable in syphilitic affections of the skin and of the mucous membranes; syphilitic eruptions and slight relapsing forms yielded to the treatment in from two to four weeks. The local reaction was slight—even less than after the use of calomel and of the yellow oxide of mercury. In no case did an abscess form, either at the point of injection or in its vicinity. Infiltrations were rare, and the more pronounced symptoms of mercurialism did not develop.

The thymolate of mercury was in 1889 recommended by Jadasohn, Zeising and Welander for hypodermatic medication. Cehak,[1] of Vienna, has used this drug in a series of cases of secondary syphilis, and is satisfied with the results obtained. He injected a five or ten per cent. emulsion of this preparation in liquid paraffin. The injections were usually made every two or four days; each patient received from six to twelve injections without noticing any local irritation. In no case did an abscess form.

The most recent advocate of the thymolate of mercury is Dr. Löwenthal;[2] he has recently published a valuable article on the intra-muscular injection of this drug in the treatment of syphilis. This paper is based upon his experience with its use in sixty patients, to whom two hundred and ninety-three injections were given, with the following results: Twelve of the patients remained under treatment; the others appeared to have derived unquestionable benefit from the treatment. The injections were made once a week for two or three months. Löwenthal used a ten per cent. suspension of the thymolate with glycerin. Improvement in the syphilitic symptoms became apparent after a few injections. No abscesses were produced in the course of the injections. The pain produced by the injections was mitigated by the addition of cocaine. Salivation was observed only in persons with carious teeth or similar complications. In one patient nausea and rigors were produced by the injections. Löwenthal thinks thymolate of mercury worthy of a place among the means of treating syphilis.

I have also with advantage used the thymolo-acetate of mercury in several cases of syphilis The formula of the aqueous suspension to be injected is as follows:

℞.—Hydrarg. thymolo-acet. . 1.5 parts.
Mucilag. gummi arab. . . 0.5 "
Aquæ destillatæ . . . 20 "
M. ft. suspension.

The injections of a seven per cent. suspension of the drug were made at intervals of three or four days. From six to ten injections suffice in most cases of recent and non-inveterate syphilis. I have especially observed the therapeutic value of the treatment in the early stages of the disease. Syphilitic roseola and the papular affections of the mucous membranes yielded after from four to six injections, or in from twelve to twenty days; the relapsing syphilides, after from two to four injections; the papular cutaneous forms and the ulcerative affections of the mucous membranes after from six to eight injections, or in from fourteen to twenty-five days; the pustular and tubercular affections of the skin required a larger number of injections. This method of treatment occasioned little pain; in no case did an abscess or considerable infiltration develop. During the last two years I have not encountered as a result of the toxic action of mercury disturbance of the digestive organs, of respiration (embolism) and circulation, or any general disorder of importance.

The hypodermatic administration of the new soluble mercurial salt—benzoate of mercury—has recently been employed by the following French physicians: Balzer and Thiroloix,[1] and Cochery.[2] Balzer and Thiroloix have in fourteen cases of syphilis (all in women) employed a watery solution of the benzoate of mercury with sodium chloride and a little cocaine (hydrarg. benzoat., 0.3; sodii chloridi, 0.1; cocainæ hydrochloratis, 0.15; aquæ destillatæ, 4); they made into the back daily injections of the contents of a Pravaz syringe (0.01).

[1] Allgemeine Wiener medicinische Zeitung, 1890, 7, 8, 10, 11.
[2] Deutsche medicin. Wochenschrift, 1890, 25. British Journal of Dermatology, October, 1890.

[1] Médecine Moderne, 1890, i. pp. 46–49.
[2] Constant Cochery: Traitement de la Syphilis par les Injections sous-cutanées de Benzoate du Mercure. Thèse, Paris, 1890.

From fifteen to forty injections were given, according to the severity of the case. Of the whole series treated in this way, eight were completely cured; four were decidedly improved; in one case the result was unsatisfactory, although thirty-one injections were administered. The local reaction (pain and infiltration) was slight, and an abscess formed in no case.

The succinimide of mercury recommended two years ago by Vollert, of Strassburg, for hypodermatic use, has recently been employed by Selenieff[1] in a series of thirty-three cases. He employed this drug subcutaneously in a one per cent. solution, and found the therapeutic effects not very marked; he recommends the treatment in mild syphilis, especially in women and children.

Hüfler,[2] of Erlangen, warmly recommends in the treatment of syphilis a new mercurial preparation—the hydrochloric gluten-peptone sublimate, which contains about twenty-five per cent. of mercury. He has treated seventy patients with this preparation, in all upward of thirteen hundred injections having been administered. The solution was so diluted that each syringeful contained two-thirds of a grain, corresponding to one-sixth of a grain of corrosive sublimate. Each of the patients received about twenty injections. From the results obtained, the author regards the preparation as prompt and reliable in action. He did not observe any irritation or the formation of an abscess at the point of injection.

Boer,[3] of Berlin, advises the use of the oxycyanide of mercury in syphilis. He employed this drug hypodermatically in thirty cases of syphilis in a one and a quarter per cent. water solution, making a daily injection of the contents of a Pravaz syringe into the gluteal region or in the back. The duration of the treatment varied from nine to forty days.

Hartman[4] has administered the black oxide of mercury in sixty-eight cases of syphilis. The drug was injected in the form of a 10 per cent. emulsion. Syphilitic symptoms disappeared after five or six injections. In ten cases abscesses followed; in three, stomatitis; pain was always very moderate.

Lindstroem,[5] of Kieff, has employed subcutaneous injections of so-called "gray oil" (introduced into the therapy of syphilis by Lang, of Vienna) in fifty-three cases of syphilis. The dose corresponded to 0.15 (2¼ grains!) of metallic mercury for each injection. His opinion is not favorable to the therapeutic value of the remedy; he says that gray oil acts on syphilitic lesions with comparative slowness during the treatment; fresh eruptions may appear; the injections are frequently most painful and give rise to infiltrations; stomatitis occurred in 48 per cent. of cases; embolism was observed in two cases; relapses seemed to be more frequent than in cases treated with other mercurial compounds.

The following inconveniences and dangerous accidents following subcutaneous injection of some of the mercurial preparations have been recently reported. Maudey[1] in one case observed necrosis of both maxillary bones as an effect of protracted injection of gray oil. Runeberg[2] has reported a case of death after injections of calomel; dysentery was observed by Cramer[3] as a consequence of the injection of calomel; Touton[4] relates a case, in which, after three injections of salicylate of mercury, an abortive herpetic eruption appeared in groups of firm papules in the course of the left posterior femoral cutaneous nerve and accompanied with pain in the left gluteal region; Petersen[5] reports a case in which an extensive erythematous and macular eruption followed half an hour after a calomel injection; the eruption faded in the course of a few days. A second injection, a week later, was followed by a similar, but much less severe eruption. A third injection failed to produce the exanthem. In the same patient a series of injections with the yellow oxide was also followed by a similar train of cutaneous symptoms.

Augagner,[6] of Lyon, has related a singular case, illustrating the inconveniences of the hypodermatic administration of the gray oil of Lang. In the case of a syphilitic patient who was treated with injections of gray oil, the disease followed its regular course and the patient was dismissed as cured. He subsequently, however, displayed a liability to the frequent occurrence of ulcerous stomatitis. Some time later he received a blow on the thigh, at the place where the injections were made; he was taken with so severe an attack of stomatitis that he had to go to the hospital for treatment. There he was found by Augagner to have two tumors, from one of which metallic mercury could be drawn by simple puncture and expression; the other tumor had to be removed and was found also to contain mercury.

The conclusion may be formulated that injections of insoluble salts of mercury at the present time con-

[1] St. Petersburger medicinische Wochenschrift, 1890, 36, pp. 319–320.
[2] Therapeutische Monatshefte, 1890, 9; Therapeutic Gazette, 1890, 11.
[3] Ibid., 1890, 7, pp. 332–338.
[4] St. Petersburger medicinische Wochenschrift, 1890, 3, p. 23–25.
[5] Medicinskoye Obosrenye, 1890, 1, p. 7–11; British Journal of Dermat., June, 1890.

[1] Deutsche medicinische Wochenschrift, 1890, 35.
[2] Ibid., 1889, 1.
[3] Ibid., 1890, 14.
[4] Archiv f. Dermatol. u. Syphil., 1889, 6, p. 775–777.
[5] Journal of Cutaneous and Genito-urinary Diseases, 1890, 10, p. 397.
[6] N. Y. Medical Record, 1890, II., 18, p. 498.

stitute one of the most favorite and valuable methods of mercurial treatment in the practice of a number of specialists of the Old World. Comparative experiments with the various remedies recently introduced for the subcutaneous treatment of syphilis have resulted in demonstrating the superiority of the salicylate and the thymolate of mercury, as convenient curative agents.

Of non-mercurial remedies for the treatment of syphilis, a substitute for iodoform, iodol, is one of the most recent additions to syphilo-therapy. This drug was recommended four years ago by Pick, of Prague, who claims good results from its external and internal administration in tertiary syphilis. I have recently published a paper on the external and internal use of iodol in the treatment of syphilis,[1] in which I record the result of the internal administration of iodol in twenty-two cases of syphilis (five cases of secondary and seventeen cases of tertiary syphilitic manifestations). Iodol was given continuously for two or three months, in doses of from eight to sixteen grains (0.5 to 1.0 grams), two or three times a day. The value of iodol consists in its harmlessness, tastelessness and odorlessness, and in the large proportion of iodine it contains; the intestinal tract is not disturbed by its employment. The therapeutic results were most satisfactory, excepting in two cases of inveterate syphilitic hemiplegia. Externally I found iodol most efficacious in several cases of tertiary syphilitic ulcerations. Cerna[2] has also used this drug in many cases of syphilis, with excellent results. He gives iodol in doses of three grains, three times a day, gradually increasing the dose to as high as twenty grains a day, without producing symptoms of iodism.

Another new anti-syphilitic remedy, cascara amarga, has been recently recommended by Haines,[3] for the internal treatment of syphilis. He believes that this remedy is almost specific, especially in the ulcerations of tertiary syphilis, and states that he has treated seven cases of tardy syphilis with very good results. The last case was one of sloughing of the palate and back of the pharynx; the patient had exhausted the orthodox treatment, and Haines recommended the fluid extract of cascara amarga with iodide. The results of the treatment were brilliant. In secondary syphilis he has seen no good follow the exhibition of the remedy. Its field in syphilis appears to be in the treatment of the tertiary manifestations when marked cachexia exists —cases in which mercury could not be given, and in which the depressing effect of the iodides would be dreaded.

[1] Wiener medizinische Presse, 1890, 8, 9, 10.
[2] THE MEDICAL NEWS, 1890, 895, p. 241-243.
[3] Therapeutic Gazette, 1890, 7, p. 451.

SUPRA-VAGINAL EXTRA-PERITONEAL HYSTERECTOMY, INCLUDING THE PORRO OPERATION.[1]

BY JOSEPH PRICE, M.D.,
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THE question of the justifiability of any operation must be determined by the ultimate results of that operation, together with the risks attending it. To these must be added a comparative estimate of the success of the other methods of treatment, with their results, dangers, and mortalities. The subject is far too wide to be considered in a single paper, which, under the conditions imposed, must necessarily be short, and hence one side of the question must be principally treated, and the arguments and facts elicited stand as data to settle many moot points in the general controversy without entering directly thereinto.

The position assumed against hysterectomy to-day by many who consider themselves authorities in the matter, and hence lead the van in the opposition to operative interference by this method, is one principally of misinterpretation of facts or of sentimental pleading. On the one hand they assume that surgeons deal indiscriminately with all fibroid tumors by a resort to the knife; and, on the other, that any surgical interference is mutilation. On this latter term especial emphasis is laid. Now let it be understood at the outset that only a small number of fibroid tumors require absolute removal. Let it be understood further that many of these tumors, though at first troublesome, disappear more or less rapidly, and cease to cause annoyance. Let it be understood again that by the term fibroid I do not include all hypertrophies, engorgements, or enlargements in which the sound is said to enter two and three-fourths inches, subinvolutions, defective involutions, and the like. By fibroid tumors I mean such growths as when seen and handled leave no doubt that they were foreign bodies as much as the splinter under the nail or the necrotic bone under the periosteum; that they have been a source of misery to the patient, and might have continued a source of revenue to the physician; that without exception the women so suffering, from the complexity of their complaints, referred to bladder, bowels, and circulation, as a result of adhesions and of tubal and ovarian disease, were willing and urgent to be relieved, and in many instances hailed operation as affording at least a chance for life that without operation was not worth having. It is further to be considered that in a considerable number of the cases under consideration in this paper, the operation of hysterectomy was not entertained at the outset, but was performed

[1] Read before the Section of Gynecology and Obstetrics of the American Medical Association, Washington, D. C., May 7, 1891.

as a last resort, because other and less radical measures were not feasible. By less radical measures I mean removal of the appendages; and when I say that this operation was not possible, I wish to draw attention to the fact that in saying that no abdominal operation but hysterectomy is difficult, Mr. Keith underestimates and misstates the situation. I have repeatedly performed hysterectomy when removal of the appendages was impossible. So has Mr. Keith, and his statements in regard to this are just as incomprehensible as they are in some other matters relative to his pretended abandonment of the operation of hysterectomy.

As to the second objection, that of mutilation, little need be said. Describing one tumor removed by him, Mr. Keith says: "No line of demarcation could be made out between the peritoneum and the tumor-wall; adhesion was everywhere most intimate." The omentum occupied the interval between the tumor and the wall, being adherent to both; as all the tissues were edematous, this only increased the difficulty. The transverse colon was firmly attached all along the upper margin; in separating this it was deprived of its omentum and of part of its mesentery. The omentum was so lacerated that most of it was cut away. On examining it after removal from the body it was impossible, even by careful dissection, to separate the adherent peritoneum. As to the result, he says: "The wound healed by first intention. Her health continues excellent, though she is a hard drinker." This tumor weighed thirty-five pounds. With the disturbed relations of the pelvic and abdominal viscera, as a result of adhesions, pressure, and edema, with pain and hemorrhage, we are, I suppose, to consider that this woman had not been mutilated by her tumor, and that only the surgeon's knife in removing the tumor instituted the work of mutilation. This argument in its fallacy can only equal the resolve of the opponents of ovariotomy not to mutilate and endanger the lives of women suffering with ovarian tumors. The sufferers might die, but they should not be "mutilated." Cow-horns might pierce the abdomen, and the patient recover, but the surgeon's knife, never!

Another point here to be insisted upon is that the size of the tumor sometimes—nay, often—has comparatively little to do with the urgency of the conditions necessitating operation. Many of my specimens show this unquestionably. A moderately large, symmetrical tumor may cause little trouble, because, in its growth, it has risen uniformly in the pelvis, and its presence is not more irritating than the fetal head. Given, however, a pelvis-bound fibroid, interfering with all the pelvic organs, together with the pelvic circulation, the situation becomes the most urgent possible. The urgency is still further increased if the tumor be not regular, but nodular, containing cysts or excrescences of various degrees of hardness and size. These are the tumors that are anomalous, and the boundaries of which can as little be determined without actual exploration as the jungles of Central Africa. They defy exact definition, and the surgeon can promise nothing as to their removal until they are seen and felt. In such cases the removal of the appendages is often impossible and often more dangerous than the removal of the entire uterus with its appendages.

The question now arises: What can hysterectomy promise and what can it accomplish? The decision arrived at long ago by Mr. Keith, that unless the mortality at that time could be reduced the operation should be abandoned, was correct. When with his prophetic eye he looked into the future and saw that the operation would never assume a position similar to that of ovariotomy, he was wrong. In the first place his ideas were based upon the unfair limitations he forced upon the operation. He says: "No one was operated upon in good health or condition." This is the key to the whole situation. It was not the operation that was so much to be dreaded as was the condition of the patients. If we operate on the death-bed we must have post-mortem results.

The advantage gained by early operation in hysterectomy is no less real than it is in all other abdominal disease requiring surgical interference. After his wonderful experience, as surgeons all know, Mr. Keith decided the operation justifiable if the mortality could be reduced to 5 per cent. in the bad cases. This can and has been done in the series I submit to the Section: 53 supra-vaginal extra-peritoneal hysterectomies, with 3 deaths; 43 consecutive operations without a death.

The combined mortality of all operators, however, is no criterion by which to judge the operation. The results of those operators who have worked out the details of procedure, with a view only of adding to its safety, with no idea of engrafting upon the procedure something that is more dangerous, as it is more cumbersome, must receive due consideration. The waste of time in carrying out some of the details of certain so-called original methods alone condems them. In all abdominal surgery expedition is essential to success, and nowhere is it more so than in the removal of the uterus.

The idea that in order to receive and merit universal acceptance, an operation must follow and conform to a general cosmetic idea is as ridiculous as it is fatal, and has given rise to a score of so-called original ideas that are only curiosities and often freaks. Upon this argument the condemnation of

the clamp or *serre-nœud* is thoroughly justifiable. With the results by all odds in its favor there is no excuse for experimenting with human life by trying to find something ideal to take its place. If these experiments are to be continued, let some other way be found than by experimenting on patients. The truth becomes more and more evident that intra-peritoneal operations can be performed with safety only in the very smallest number of cases, and even in these not without grave danger, owing to the peculiar nature of the stump. This I have elsewhere discussed. It is only necessary here to repeat that the stump is contractile, often cartilaginous and tough and unyielding. Its bloodvessels are rather to be considered sinuses; consequently when an attempt is made to ligate each bleeding point, the number of points at which a ligature must be left is often enormous, and of itself sufficient to cause pathological changes in the stump. The constriction of the stump, then, is, from its nature, the best mode of treating it. The Kœberlé *serre-nœud* affords the best means of applying such constriction. The method of regulating this constriction will be again referred to.

Coming now to the technique of the operation, it is first to be said that it is one of absolute, careful, painstaking watchfulness. Routine is possible only in the simplest conditions, and each additional complication must be treated and overcome as it arises. It is fatal to the success of the operation to go on in the face of difficulty after difficulty, unless each one is cleared up to leave clear ground for that which follows. The incision—median—is to be regulated according to the size or the depth of the tumor. A mass deeply fixed in the pelvis may require a very large working-space. All bleeding vessels are to be controlled as they are encountered. The mass is then to be studied, and its adhesions located as its removal is attempted. These adhesions are to be regarded as stages of the operation, each one being dealt with and overcome before another is approached. One is not to be abandoned and left bleeding while another is sought and freed. Such work will result in confusion, and prolongs the operation if it does not defeat the result. If bowel, omentum, bladder, abdominal wall, transverse colon or other part of the intestine be adherent, each is to be freed and carefully examined before it is abandoned; all damage is to be repaired at once. While such manipulation is being conducted, all viscera necessarily exposed are to be kept warm, and to be frequently douched with hot water. The bladder is to be most carefully looked after. Complications that endanger this organ, the ureters, or the kidneys are those that most frequently result disastrously in all abdominal operations.

Whether or not the bladder should be injected, in order, when all boundaries are lost, to have at least one landmark, is a question not always easily decided. Sometimes the bladder is so crowded in the pelvis that its injection would accomplish very little; in others, there would be a distinct advantage in distending the organ. The best rule, it seems to me, is to act in each case according to the conditions presented, and not to lose sight of the possible benefit that might accrue from distending the viscus. Having freed the adhesions, the mass, if not already raised while the adhesions were being freed, is to be lifted out of the pelvis. This may sometimes be done without other instrument than the hand; at other times, the broad-bladed corkscrew is necessary. In the case of vascular or myomatous tumors, the capsule of the tumor is to be regarded as sacred ground, bearing the admonition, "Keep off." To wound the capsule is to seriously complicate the operation.

Having so far seen that the operation is one involving a knowledge of the most varied intestinal surgery, and that from the nature of the adhesions one must be prepared to perform any or all of the common abdominal operations, we must briefly retrace our steps and consider the removal of the appendages as a distinct part of this operation. In certain cases the operation is begun with the intention of removing only the appendages, but by reason of the diseased condition of these, and the consequent adhesions and relations, the ablation of the entire uterus is alone feasible, and is forced upon the operator as a last resort. In such instances, the extent of adhesions is apt to be greater and their complications much more serious than was anticipated, even with a careful antecedent *reconnoissance* of the situation. It therefore again becomes apparent that in no case of anticipated removal of the appendages for fibroid tumors should the operator undertake the operation unless he is also prepared to perform hysterectomy. Possible successes have in this manner become disastrous failures.

In the final steps of the operation, to wit, in dealing with or in making the stump, the most skilful surgeon will often find himself hard pressed. In some instances the procedure is as easy as the easiest operation in surgery, under established routine; in others, and for these no absolute rule can be laid down, ingenuity is often taxed to the utmost to obtain and to utilize the tissues freed for the formation of a stump. If it is necessary to make a stump, the capsule of the tumor is to be incised, hemorrhage being controlled by an elastic ligature, the broad ligaments freed and retracted, the mass raised, and the peritoneal covering utilized in shutting off the pedicle from the peritoneal cavity. This all seems clear and concise, but to appreciate the method and its difficulties, a clinical and operative study is in-

dispensable. Herein lies the fallacy of determining the mortality of the operation by the results of all operators. The learner's mortality must always be great in the first series of cases, unless the conditions are extremely simple, or unless the work is done in association with a more experienced worker, who himself has wrought out a technique from the knowledge of the work to be accomplished.

In the application of the *serre-nœud* after the stump has been freed, or made, care must be taken that it is not placed so far down against the vaginal vault as to include the ureters, or to exert too much traction on the abdominal walls. Care being taken to include nothing but the stump, the *serre-nœud* is tightened by means of the screw, the pins are placed in position, and the tumor cut away. The *serre-nœud* is then again tightened to stop all oozing. The stump is then carefully trimmed; while the stump is firmly held in the lower angle of the abdominal wound, the parietal peritoneum is stitched to the peritoneum of the stump, and so excludes the *serre-nœud* from all communication with the abdominal cavity, the two peritoneal surfaces being stitched together below it. The remaining abdominal incision is now closed, drainage being provided for or not, according to the number and extent of the adhesions. The stump again receives attention, dry gauze being firmly packed around it and between it and the abdominal wall. After having been drawn by convenient stitches into as small a compass as possible, its cut surface is dressed with a dry powder, iodoform being the one generally used in my work. In Greig Smith's description of the operation, the final treatment of the stump is left without the exact consideration it deserves.

Finally, I would say that in all these operations the results are astonishing in their smoothness. In many cases there is absolutely no bad symptom, and, in the majority, the recovery is a matter of less concern than in many pelvic cases. In only one case have I had the misfortune to implicate the ureter, and in this I have learned a lesson that hereafter shall stand me in good stead. The details of the case, with its ultimate results, will be the subject of a further communication. The cases, once recovered, are permanently well, with no danger of recurrence. A consideration of my cases shows that the mortality has been reduced below that of the supposed more conservative treatment. The wonder to me is that Mr. Keith, after detailing operation after operation, in which a similar success was recorded, can now so far forget his wonderful record and wish that he could undo his work in order to experiment with palliative and tentative measures. Surgery is an art; its progress must depend on the labors of original workers. The man who stops half-way in the midst of crowning success must leave his art where he found it, and, retreating, abandon his position, unprotected.

A REPORT OF FIVE CASES OF CHRONIC MERCURIAL POISONING.

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THE following cases of mercurial paralysis are interesting examples of the toxic effects of mercury upon persons brought in contact with the metal or with the vapor, and are recorded as a contribution to the literature extant upon the subject of chronic mercurial poisoning.

It will be observed that in these cases the palsy first affected the upper extremities, and then by degrees the entire muscular system. In none of the cases were the muscles of mastication and deglutition involved—this condition occurring only in very advanced cases of the disease. In only one case was there a distinct line, blue in color, upon the margin of the gums. Ankle-clonus was not present in any of the cases. In four instances the knee-jerk was exaggerated. All the cases showed marked mercurial salivation, but in no case was there any history or evidence of the cathartic effect of the drug upon the bowels.

The treatment of these cases consisted in removing the patients from surroundings in which they would be exposed to the ingestion of more of the poison; warm baths were ordered; potassium iodide in gradually increasing doses was prescribed and a mild tonic, such as Basham's mixture, advised. The bowels were also carefully regulated.

CASE I.—P. M., a male, forty-five years old, married, employed in the manufacture of felt hats, presented himself for treatment in November, 1889, with the following history: He had always been a healthy man, and was the father of four robust children. For nine years he had worked in a hat factory, thus coming in more or less frequent contact with mercury, which is used in the business. For a year past he had not felt like himself and for the last six months he had steadily become worse. During this time, his teeth had loosened; his hands had become tremulous and unsteady—so much so, that he could not hold a newspaper still long enough to be able to read it with any satisfaction. Later on, his eyes began to twitch, and in attempting to read, black spots would appear and dance about before them. In walking, his gait was tremulous and unsteady. Upon being questioned, he stated that sexual power was dormant, and had been so for over a year; his weight had markedly decreased—as much as twenty-five pounds during the preceding six months; his appetite had been and still was very poor; the hair had fallen out from his face and head in considerable quantity. He also stated that he

was subject to attacks of vertigo. The bowels were regular and he was not subject to diarrhea. Ptyalism was marked; speech was thick and articulation slow; his memory was poor, and his breath fetid; the border of the gums, at the margin of the teeth, was marked by a distinct *blue line;* the extremities were in a state of constant tremor.

CASE II.—John M., fourteen years old, employed in a hat manufactory, came under my observation January 9, 1890. His father stated that the lad was always healthy and full of life until the present illness, since which he had been "dead-like" in his actions. He had been employed in the hat factory for over a year, sweeping the floor and feeding the machines with fur. The history of his illness was, that four months previously he had begun to feel weak; his memory perceptibly failed, and temporary headache ensued; there were marked signs of ptyalism, as well as a bad taste in the mouth and a fetid breath. He was costive; the appetite was unimpaired. About a month later, his gait in walking became unsteady and his feet felt like lumps of lead. In attempting to pick up anything, he was obliged, for want of proper control over his movements, to make several ineffectual attempts. The appearance of the boy betokened a dull intellect. Upon extending the arms, and only then, did marked ataxic symptoms appear in the upper extremities. In walking, the legs dragged and knocked against each other. The tongue was quite tremulous upon protrusion. There was no apparent loss of power as shown by grasp of hand. The teeth were sound and perfect, the gums spongy, bleeding upon slight pressure. The breath was fetid and the salivary secretion profuse. When told to extend the arm with the index finger protruding, and to quickly touch the tip of nose, he obeyed only after an effort and in an uncertain manner, more frequently touching the face, forehead or bridge of nose. Given a pencil and told suddenly to drop it, he had great difficulty in releasing his hold of it. The patellar reflexes were greatly exaggerated, and the ankle clonus absent.

CASE III.—M. A. B., thirty-five years old, married; also works in a hat factory. Previous to this employment he had been an hotel-keeper. As a child he was healthy. He had scarlet fever at the age of ten. He never drank to excess, but as a youth indulged freely in venery. At the age of nineteen he contracted syphilis, and was treated for this disease for nearly two years by a well-known genito-urinary surgeon of New York. He was married at the age of twenty-four, and has had five healthy children, his wife never having had a miscarriage. He has been employed in his present business for ten years. He formerly weighed 156 pounds, but since working in the hat factory he has gradually lost flesh from year to year. Soon after entering upon his duties he experienced frequent attacks of indigestion and spells of biliousness, from which affections, he tells me, most of the men in his department suffer. He also states that, whilst some men are affected with diarrhea, he, with the majority of the employés, is constipated. Another curious fact he related was that some of the workmen had no control over the passage of urine; especially was this the case among those employed for any length of time upon the mercurialized materials. The first serious attack of the patient's present trouble dates from August, 1889, at which time his weight was 106 pounds. In this seizure the fingers and hands became shaky, and this was soon followed by general tremors of the body and lower extremities. His appetite was not impaired. At night his sleep was disturbed by dreams of a horrible character and by involuntary muscular twitchings. In talking, his tongue felt thick and he had but little control over its movements. His speech was muffled and at times barely intelligible. Sensation was not impaired. In walking down stairs he experienced considerable difficulty and had a constant fear of falling. He could ascend a flight of stairs all right. In seven weeks he returned to work, but was obliged to quit in a little over a month's time. At the suggestion of a physician, he went to the seashore and indulged in sand-baths. He improved and returned to work, at which he continued until November, 1889. At this time most of his trouble was due to his ataxic gait, though he was still affected by the general tremors. In this attack, his eyesight annoyed him considerably. In reading, letters appeared blurred and would run together. His memory failed. The appetite remained unimpaired—if anything, exaggerated and capricious, although he suffered from indigestion. The bowels were costive, but were regulated by taking a cup of hot water every morning. The gums became quite sore and the teeth loose. In December, 1889, he came under my observation, at which time his condition was as follows: He was fairly well-proportioned; there were general tremors of the body and a marked ataxic gait—the feet seeming to drag along the ground when patient attempted to walk; the strength in the hands was about normal. The breath was fetid, the teeth loose, the gums spongy; upon protrusion, the tongue was quite tremulous; the speech thick and guttural; there was no ankle clonus; the knee-jerk was exaggerated upon both sides, and upon being told to extend the index finger and forearm and to bring the tip of finger to the edge of nose, he was able to do so only after fumbling over face. The lungs and heart were normal.

CASE IV.—Martin V., sixty-three years old, married, also occupied in the manufacture of hats, presented himself for treatment January 10, 1890. His previous history was to the effect that he had always been healthy. He was married at the age of thirty-two. He had always been a steady man, had never used liquor to excess, though, like most Germans, he indulged in his glass of beer. He chewed tobacco freely, but seldom smoked. He denies any indulgence in venery until after marriage. He came to this country in 1854, at the age of twenty-seven. In 1870—twenty years ago—he commenced work at his present occupation. For eleven years, or thereabouts, he worked at heating the irons with which the hats are burnished. During this time he felt well, with the exception of a constant cramp in the muscles of the calves of legs. He was then transferred to the fur department, where he helped

to mix the solution of quicksilver and acid used to preserve the fur, and also to pack the fur into five-pound parcels. Soon after entering upon the duties of his new occupation he became dyspeptic and he noticed that his salivary secretion was freer than usual. He also had a disagreeable, metallic taste in the mouth. At the expiration of two years he felt unsteady in his movements, and had slight twitchings of the muscles of the face and upper extremities. His gums also became swollen and sore. Later on, these feelings increased in intensity and were soon followed by tremors, first noticed in the arms, then in the legs, and finally, the ataxic movements became general. He was obliged to quit work, as he could not feed nor dress himself. Under treatment he improved, and returned to the factory. The attack on account of which he sought advice had begun one week previously. The legs became heavy and felt like lumps of lead; the hands and arms became tremulous, the appetite poor and he complained of a constant drowsy feeling. He has had no diarrhea and never has been otherwise than regular in respect to movements of the bowels. He was well-preserved for one of his years. His gait in walking is best described as ambling. The arms were ataxic and it was impossible for him to bring suddenly the tip of the index finger to the end of the nose. The knee-jerk was rather below the normal. No ankle-clonus was present. The teeth were in poor condition, loosened and very much darkened, although the patient affirmed that he had taken good care of them. There was no line upon the gums. The breath was fetid, and there were evidences of salivation. The tongue was tremulous upon protrusion, and he complained of considerable temporal headache.

CASE V.—John K., eighteen years old, employed in the same business as the other patients, came under my care in December, 1889. He did not seem to possess an over-bright mental faculty. Two and a half years previously, he started to work at manufacturing hats; he stated that at that time his physical health was good. Seven months previously he began to feel the effects of the work. His hands became unsteady and tremulous, and a month later his feet were similarly affected. The gums became sore and swollen, and salivation ensued, but the teeth did not become loosened. The memory was impaired. He was obliged to quit work two weeks before he came under my observation. The gait was markedly ataxic; upon standing or sitting, his movements were not unlike those seen in a bad case of major chorea. The tongue upon protrusion was quite tremulous, and mercurial fetor of breath was very noticeable. The gums were spongy, red and quite sensitive; the knee-jerk exaggerated, and the ankle-clonus absent.

1610 ARCH STREET.

"GENTLEMEN, I want you to *love* pathology, for pathology will teach you the morbid processes which govern the body as physiology does the normal, and you must be able to watch these morbid processes from beginning to end; if not, you cannot understand disease; if not, you will be like a sailor without a compass."—DR. H. G. SUTTON.

TYPHOID FEVER WITH LOW TEMPERATURE.[1]

With Remarks as to its Probable Cause.

BY H. L. JENCKES, M.D.,
OF HAZEL GREEN, WISCONSIN.

IN a lecture[2] at the Philadelphia Hospital, Dr. James C. Wilson divided *atypical typhoid fever* into the following classes: (1) mild typhoid; (2) abortive typhoid; (3) typhoid of childhood; (4) typhoid of the aged; (5) cases of febrile intestinal catarrh; and (6) cases of afebrile intestinal catarrh. It is to this last and rare form that I would direct attention.

A case of this kind occurred in a child about ten years of age.[3] When first seen he had been unwell for several days. He complained of headache, his bowels were constipated, and he was slightly feverish at night. During the first six days of treatment there was continuous fever, with a gradual rise of temperature until 103.5° was reached. His pulse was full, strong, and moderately rapid. Marked looseness of the bowels now set in, with some tenderness in the region of the ileo-cecal valve. On the seventh day of treatment, and about the tenth day of his illness, the temperature began to decline and soon dropped to 101°—a fall of 2.5°. As the patient had not been overwhelmed with quinine, or any of the antipyretics, it could hardly have been the result of treatment. During the next three days there was a still further decline of temperature until 98° was reached. Rose-colored spots appeared upon the abdomen, and there was marked tenderness in the region of the ileo-cecal valve. The tympanites was at times marked, and the discharges from the bowels, which remained loose, frequently contained blood. The duration of the illness was about four weeks, and during most of this time the patient's temperature was from 98° to 99° with all the other symptoms of typhoid fever well marked.

This case, with others that have been published, tends to prove that elevation of temperature is not absolutely invariable in cases of typhoid fever, although, excepting in mild cases, it is generally believed to be so. In looking over the literature of the subject at hand, I can find but few cases reported. Fräntzel[4] reports 11 cases of typhoid fever which attacked exhausted individuals, and in which there was low temperature or absence of fever, but in which there were general collapse, serious cerebral symptoms, and a tendency to gangrene of the extremities, which ran a strikingly acute course. Such cases indicate that high temperature is not

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[1] Read before the Dubuque (Iowa) Medical Society.

[2] Medical News and Abstract, July, 1881.

[3] See detailed report in Boston Med. and Surg. Journal, Sept. 22, 1887.

[4] Zeit. für klin. Med., Band ii.; from the Medical News and Abstract, September, 1881, p. 537.

the only cause of death in typhoid fever, but that cerebral symptoms are of great importance, and that, even with low temperature, patients must be carefully watched to prevent them from the many evil consequences of even quiet delirium. In the article on typhoid fever in *Ziemssen's Cyclopedia*, Liebermeister[1] mentions cases in which the temperature was not high, but such cases are classed as mild. He attributes more significance to the character of the temperature than to any other symptom of the disease. Professor Flint[2] says: "More or less increase of the heat of the body is invariable. The rule that during the greater part of the disease the temperature is raised, is without exception; but under certain circumstances the heat may not exceed, and it may even fall below, the standard of health."

In a review of the *Transactions* of the Academy of Medicine in Ireland,[3] I find the following:

"Mr. J. V. Lentaigne's case of fatal peritonitis, following perforation of an ulcerated small intestine, is of very great value with reference to the diagnosis of enteric fever and the occurrence of afebrile cases of that disease. The patient from whose body the specimens were taken came from a notoriously unwholesome tenement, in which thirty-three persons lived in eight apartments. Seven deaths had recently occurred, and one man was then sick abed. Furthermore, the main sewer of the street had been for some weeks open. The man had been ill for about a fortnight and had been refused admission to three hospitals. When received into the Jarvis Street Hospital, although manifestly ill, his temperature was normal, and the difficulty in diagnosis appeared to be due to this fact. The autopsy discovered the lesions of enteric fever."

The writer of this review (James C. Wilson) has elsewhere insisted upon the fact, too little recognized, that enteric fever may run its course not only without the typical temperature of Wunderlich, but even with a subfebrile temperature; and in certain rare cases, the nature of which is established by the complexus of symptoms and the coexistence of house epidemics, actually without any rise of temperature at all. It is a quibble to say that such cases are not enteric fever. They are the specific enteric disease of which the usual fever is merely one of the prominent, but not therefore always essential, symptoms. Professor F. C. Shattuck expresses a similar opinion.[4] He says: "It seems to me that there is absolute proof that typhoid fever may exist and even prove fatal without the presence of fever." And Strube[5] has reported 14 cases of typhoid fever in which the temperature was normal or subnormal. These cases occurred among the German troups besieging Paris.

[1] Ziemssen's Cyclopedia, vol. i.

[2] Flint's Practice of Medicine, p. 878.

[3] American Journal of the Medical Sciences, October, 1884, p. 493.

[4] Boston Med. and Surg. Jour., vol. cxxi., No. 10.

[5] Ibid.

In attempting to account for such cases, it will be necessary to refer briefly to the etiology of typhoid fever. The typhoid bacilli seem to flourish chiefly—or perhaps only—when they find lodgment in the small intestine. The idea that the disease can originate by the inhalation of this pathogenic organism is extremely doubtful. Finding lodgment in the lymphoid follicles, the bacilli not only rapidly multiply, but produce ptomaïnes. Soon the bacilli are carried by the lympathics to the mesenteric glands; from these glands they seem to penetrate into the blood, and finally find lodgment in the spleen, liver and kidneys. The effect of the bacilli, and of the putrefactive process that their rapid multiplication soon produces upon the system, is to produce, first, a toxemia; secondly, a septicemia by causing abscesses in the glandular structures; they may produce a pyemia. It is possible that a toxemia can exist without elevation of temperature, since it is well known that the susceptibility to toxic agents differs greatly in different individuals. Although difficult to explain,[1] this undoubtedly plays an important part. It may perhaps be owing to a greater or less degree of vitality inherent in all cellular and tissue elements. To better illustrate this principle of susceptibility, one might say that yeast produces alcohol, and the absorption of a certain quantity of alcohol produces intoxication. Nevertheless, the absorption of this fixed quantity of alcohol will not produce intoxication in every individual. A case, reported by Professor Rossbach[2], has a corroborative bearing on this question. The patient, he states, was receiving naphthalin for the treatment of typhoid fever. During fifteen days the fever was entirely absent; but no sooner was the remedy suspended than the temperature rose. Professor Rossbach does not claim that naphthalin reduced the fever, but thought that by counteracting the putrefactive process in the intestine the source of the fever process was removed.

It seems therefore not improbable that a toxemia may exist in an individual whose system is so little disturbed by the toxic principle (the ptomaïne) that the usual symptom of fever does not occur. From this study of the subject the following may be deduced:

1. The typical temperature of Wunderlich does not occur in all cases of typhoid fever.

2. That even severe cases are occasionally seen

[1] "It may mean some slight difference in the chemical constituents of the body, the excess of some element that is noxious to the development of the bacteria in question, or the deficiency of some substance that is necessary for their vigorous growth." W. Watson Cheyne in the American Journal of the Medical Sciences for January, 1887.

[2] See the Therapeutic Gazette, January 15, 1885.

in which the temperature does not exceed the normal.

3. That it is unnecessary, and may even be hurtful, to direct the treatment solely to the reduction of the fever. (This refers to *antipyretic remedies*, and has *no* reference to the Brand system of cold baths, the beneficial results of which are confirmed by Ziemssen, Jürgensen, and by members of the Lyons school in France.)

4. If it be true that the introduction of the typhoid bacilli into the system and their rapid multiplication cause putrefaction, and if the absorption of this putrefaction-material produces the phenomena of typhoid fever, then of course it follows that the *early* administration of remedies that will keep the intestinal canal in as nearly an aseptic condition as possible seems imperatively indicated.

CLINICAL MEMORANDUM.

A NOTE ON FLUORESCIN-COLORING AND THE ACTUAL CAUTERY IN CORNEAL ULCERS.

BY G. E. DE SCHWEINITZ, M.D.,
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As is well known since the publications of Straub, Thomalla, and Fromm-Groenouw, a concentrated, two per cent. alkaline solution of fluorescin colors green any portion of the cornea deprived of its epithelium, while the healthy epithelium remains unaffected. At first this discovery seemed devoid of practical value, but it soon acquired diagnostic worth in detecting minute abrasions of the corneal surface, particularly when these were of traumatic origin. Perhaps its most important use has recently been suggested by Nieden (*Centralblatt für praktische Augenheilkunde*, May, 1891), in connection with its value as an aid to the actual cautery in the treatment of ulcers of the cornea. This earnest advocate of the galvano-cautery in ocular therapeutics has more than once lamented the lack of exact means for determining how extensive should be the application of the glowing point of the instrument. In his last communication upon this subject he pointed out that he was rarely obliged to resort a second or third time to the use of the cautery, but in the very first instance succeeded in applying the heated needle to the entire area of ulceration, in spite of the fact that he was without a method of outlining with absolute certainty the entire area which required destruction. This means is now at hand in the form of fluorescin, because, by its use, the border between the sound and the diseased area can be demonstrated with exactness. More than this, the depth of the ulceration and any outlying areas of infiltration deprived of their covering of epithelium are indicated by the green coloration. In common with a number of observers, I have often made use of fluorescin for the purpose of staining deep and superficial ulcerations of the cornea, and of demonstrating the rate of progress in the healing of any corneal ulceration, and the presence of minute foreign bodies imbedded in the surface of this membrane. Quite recently, acting on the suggestion of Nieden, I have employed it in several cases of ulcer of the cornea, to which, afterward, the glowing point of a thermo-cautery was applied. Two cases will illustrate its value.

CASE I. (Philadelphia Hospital.)—An adult with chronic trachoma: on the left side, in the stage of cicatrization; on the right side, in the stage of ulceration of the follicles, with pannus. This eye, owing to exposure, took on a violent form of keratitis with dense pannus in the upper portion of the cornea, while in the lower half there appeared an irregularly crescent-shaped ulcer with sloping margins and outlying spots of infiltration. The entire cornea exhibited the well-known whitish infiltration so common in this disease. The manipulation was as follows: An application of a few drops of a two per cent. solution of fluorescin (Gruebler's fluorescin 2 per cent.; carbonate of soda 3.5 per cent.) was made to the affected eye. The entire crescent-shaped ulcer was colored a deep green, and, still more interesting, three of the more saturated whitish areas of infiltration situated in the general haze of the cornea acquired a similar color. This at once became the guide for the proper application of the actual cautery. The ulcer itself and the three superficial spots were cauterized, or, in other words, all those spots which had been stained green were subjected to this treatment. It seems to me, in a case of this character, that the three smaller areas certainly would have been overlooked without the use of fluorescin, and their character of superficial ulceration undetected, owing to the obscuration produced by the general haze and development of vessels in the cornea.

CASE II. (Children's Hospital.)—A child of about five years of age, with an ordinary phlyctenular keratitis, in the course of which a phlyctenular ulcer appeared below the centre of the cornea. In this stage the child was admitted to the wards, and the following manipulation performed: A few whiffs of ether were given to quiet the little patient, and the point of the cautery applied to the somewhat irregular ulcer and its slightly infiltrated margins. The eye was now washed out with boric acid lotion and a few drops of the fluorescin solution applied. It then became manifest that all ulcerated spots had been destroyed with the single exception of a small portion of the upper and inner margin, slightly distant from the main body of the ulcer, which at once assumed a deep-green, characteristic color. A second light application of the cautery to this spot destroyed the previously untouched area.

Nieden calls attention in his communication to the very points which are illustrated in these two cases selected at random. He dwells particularly upon the fact that in serpentic ulcer of the cornea, beyond the well-known half-moon-shaped area of propagation, one or two small, sharply marked spots of infiltration are commonly present, but, owing to the diffuse opacity of the border-zone of the ulcer, not readily detectable, unless they are colored green by the instillation of fluorescin. Every surgeon must have seen a phlyctenule start at the border of the cornea, break down into an ulcer, push its way toward the centre with an advance guard of infiltration and a rear guard of densely injected vessels, and with a strong tendency to perforate, or at all events to form a stubborn type of keratitis, which, on heal-

ing, leaves a disfiguring stripe of opacity. In such a case a drop or two of the fluorescin mixture will accurately outline the extent of the ulcerated infiltration and give exact information as to where the point of the cautery should be applied, but more than all, as to what extent the destruction of the tissues should be carried.

ORIGINAL LECTURE.

ACUTE ARTICULAR RHEUMATISM COMPLICATED WITH ACUTE ENDOCARDITIS—TYPHOID FEVER,

With Two Relapses and other Complications.

A Lecture delivered at the Philadelphia Hospital.

BY JAMES M. ANDERS, M.D.,

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GENTLEMEN: The patient, an unmarried carpenter, twenty-eight years old, gives a maternal family history of rheumatism. He had scarlet fever and diphtheria in childhood. Seven years ago, he had an attack of articular rheumatism. He admits a history of syphilis. Toward the close of December, he noticed stiffness and soreness in his knee-joints, following exposure—working in the snow. In the course of a day or two his shoulder-joints became affected, and soon the wrist-joints were painful and swollen. In a few days there was some improvement, but subsequently the joint affections again grew worse. On the day of admission the patient was able to walk, though the wrist and shoulder of the left side were swollen and painful. The temperature was 102°. He was given salicylate of sodium, and defervescence soon followed, with improvement in the condition of the joints. A few days later the cardiac impulse was observed to be increased in extent and displaced in location.

The heart beat strongly but regularly, but there was no change in the condition of the pulse at the wrist at this time—an important fact to bear in mind in connection with the cardiac complications of acute articular rheumatism. A soft, blowing, systolic murmur, with slight prolongation of the first sound, was heard with greatest distinctness over the base of the heart and transmitted into the carotids. A day or two later there was detected at the apex of the heart, a soft, systolic murmur, heard most distinctly at the base, not transmitted to the left or to the angle of the scapula, but transmitted into the carotids. The physical signs indicated the existence of an acute exudative endocarditis, though there may have been an interstitial endocarditis. The cardiac percussion-dulness extends beyond the nipple line; the impulse also extends beyond the line of the nipple. The diagnosis of acute endocarditis cannot be positively made in the absence of a systolic murmur, though endocarditis may exist and pass through its various stages without the detection of a murmur. In such a case the alteration in the seat of the impulse, on inspection, and the variability of the seat and intensity of the impulse, on palpation, are evidences of the existence of the inflammation. If chronic interstitial endocarditis already exists, the diagnosis is difficult. When an acute endocarditis is engrafted on a chronic endocarditis, the area of cardiac percussion-dulness is augmented. In the first stage of pericarditis we hear a to-and-fro friction-sound close to the ear, not always synchronous with the action of the heart and not propagated beyond the precordia. In endocarditis the murmur seems more distant; it is heard most distinctly at the apex and with the heart-sounds. In pericarditis the murmur is heard most distinctly at the base. In the second stage of pericarditis, when effusion has taken place, the area of cardiac dulness is increased and of pyramidal shape, the base below, the apex above, and extends a little to the left of the nipple line; the friction-sound heard in the first stage is absent. In endocarditis the area of cardiac dulness is unaltered; in pericarditis the heart-sounds are heard distinctly at the base, though feeble, muffled, and distant at the apex; the impulse is more extensive than in health. Other complications may arise in the course of articular rheumatism. Bronchitis occurs in about 16 per cent. of cases; pneumonia and pleurisy may develop. Pleurisy with effusion is more apt to occur when pericarditis is the primary affection; pneumonia occurs with both pericarditis and endocarditis. General pulmonary congestion may manifest itself suddenly and terminate fatally; not infrequently, in the course of articular rheumatism, death takes place from catarrhal pneumonia. The polyarthritic affection may be mistaken as pyemic; the previous history will aid in clearing up the diagnosis. When pyemia exists, there is a history of injury or abscess or of infectious disease; there are repeated rigors, the temperature suddenly rising to 104° or 105° within an hour, declining by crisis, or with sweating during the remission. In rheumatism there are well-marked exacerbations of fever; the temperature may be high but is sustained, and defervescence is not sudden, while the sweating often continues as long as the fever. The visceral complications of pyemia are different from those of rheumatism; there may be endocarditis and pneumonia, but abscesses of internal organs are common. Pyemia is rather rapidly fatal; rheumatism is not. In pyemia the local affections are not so well marked. In rheumatism the joints have a glossy appearance and the tenderness is in the synovial membrane; in pyemia the tenderness and swellings are more apt to spread above and below the joints. In rheumatism the articular invasion is erratic; in pyemia it is not, though sometimes two or more joints are affected. The points of distinction between rheumatism and glanders need merely be alluded to: glanders usually occurs in those engaged in handling hides or wool; the joint affections occur only in the early stage; later, a typhoid state is developed, with blebs on the skin and subcutaneous abscesses.

The prognosis of articular rheumatism is favorable; the mortality is from 3 to 5 per cent., and is largely dependent upon the visceral complications; the heart complications are apt to lead to chronic incurable conditions.

In this case salicylate of sodium was given in doses of 20 grains every two hours, for twelve hours; during the next twelve hours alkaline treatment was pursued. Salicylate of sodium sometimes aggravates the heart complications; alcoholic stimulants should then be resorted to. If unpleasant symptoms persist, the salicylate should be

withdrawn and the alkaline treatment substituted. Alkalies prevent the visceral complications of acute rheumatism, salicylate of sodium does not. The alkalinity of the blood is maintained by the vegetable acids, so that these may be exhibited as soon as the temperature has fallen several degrees. Quinine may be given in does of 2 grains every four hours. Opium, in small doses (gr. $\frac{1}{10}$ of the aqueous extract), exerts a favorable influence in acute endocarditis and gives relief from pain; laudanum with an alkali applied locally as a lotion gives relief. Before the temperature has fallen to the normal, iron should be given in acute endocarditis to overcome the anemia. The following is a favorite prescription:

℞.—Ferri et ammon. citratis . . . ʒij.
Tinct. gentianæ comp. . . . ʒij.
Glycerini . . . . . ʒj.
Aquæ . . . . . q. s. ad ʒiv.
Sig.—A teaspoonful, diluted, every three hours.

When there is reason to believe that the myocardium is affected in any degree in acute endocarditis, digitalis ought not to be given. The temperature of the room should be kept at between 68° and 72°.

The second case is that of a mulatto girl, twenty-three years old, admitted to the hospital with low delirium; when her mind cleared she stated that she had been ill six weeks previously. The left popliteal space was now swollen, evidently from venous thrombosis, a result of a sluggish circulation. Her tongue was furred, but red at the edges; the abdomen was tympanitic; there were pain and gurgling in the right iliac fossa and diarrhea. At the bases, posteriorly, the percussion-resonance was impaired, and the respiratory murmur was enfeebled; moist râles were heard over the same regions—a result of the feeble circulation. The pulse was small, thready, and hurried; the temperature 104°. She was given quinine, gr. ij., every four hours, by suppository; carbonate of ammonia, gr. v., every three hours, with alcoholic stimulants internally and poultices to the thorax; liquid diet. The abdominal symptoms and the general condition improved; it was thought the patient was passing through the third stage of typhoid fever, when intestinal hemorrhage took place, the temperature rapidly falling, the blood, however, not escaping until twenty-four hours later, when sixteen ounces of dark clotted blood were passed. When intestinal hemorrhage occurs in the course of typhoid fever the temperature falls at the time of bleeding, although the blood, as a rule, does not escape at once. Always suspect this complication when there is a sudden decline of temperature of 3° or 4° F. When intestinal hemorrhage occurs early in the course of typhoid fever it is due to congestion; the epistaxis results from the same cause. When intestinal hemorrhage takes place during the third week, it is due to the opening of a vessel by the ulcerative process in the bowel. After the temperature had fallen below normal, in another day it arose again; two days later another hemorrhage took place and was followed in the course of twelve hours by the evacuation of thirty ounces of a dark-brown, watery fluid. The temperature remained depressed after the second hemorrhage and did not rise again; the patient passed into a state approaching collapse, with pinched countenance, feeble pulse and moist skin. When intestinal hemorrhage occurs in the third week of typhoid fever, a condition simulating perforation may develop, with pallor, weak pulse, moist skin, but without pain. When perforation occurs symptoms of peritonitis are developed, with swelling of the abdomen, great tenderness on palpation, rapid pulse and pain. The temperature of the patient had been subnormal for nearly a week, when she ate some candy and fruit, after which the symptoms of relapse appeared. It is generally stated that relapses in typhoid fever do not result from errors of diet, but from a predisposition on the part of the system—in other words, some virus remains latent until its development is excited. The course of a relapse is different from that of the original attack: the onset is sudden and the stage of high temperature is of shorter duration. Certain complications may arise during a relapse. In this case there was developed, over the outer side of the os calcis, enlargement of the bone, localized pain and tenderness, not dependent on thrombosis, but upon periostitis—a rare sequel. As a rule, it is not followed by necrosis. Hemorrhage may occur during a first relapse, but it is rare during a second. The finger-nails become marked by a white line for each attack.

CURRENT LITERATURE.

HAY-FEVER AND EXCESSIVE SNEEZING.

DR. J. E. BULLOCK (*The Provincial Medical Journal*, June 1, 1891) presents a timely paper on the subject of "Hay-fever and Excessive Sneezing." In the treatment of hay-fever the first indication is to improve the general health; as the disease is exhausting, the patient should avoid over-fatigue and should take a nourishing diet; alcohol in any but a moderate amount is to be avoided, as it increases the nasal hyperemia that conduces to the disease. Coffee, as a stimulant, is particularly useful in the asthmatic form, as it is in ordinary bronchitic asthma.

Those who are able should move away from the source of irritation, and in most cases a residence at the seaside, where there is a prevailing wind from the sea, or a sea-voyage, well away from land, is the best means of escaping the irritation. At home, the patient will avoid proximity to pollen grains, and will protect his eyes, either by wearing "goggles" or by staying in-doors in the middle of the day; a veil of "double gossamer" will protect both his eyes and his nose from pollen irritation. In relieving the attacks, opium and belladonna have been found most useful, acting probably by reducing the secretion and diminishing irritation. Tincture of opium, either with or without tincture of belladonna, may be given in five-drop doses twice a day or one-twentieth of a grain of morphine and one-two-hundredth of a grain of atropine, night and morning. Belladonna may be found useful in those cases in which there is irritation in the roof of the mouth, but cocaine lozenges are generally more useful. In persons of nervous temperament the pill of valerianate of zinc and asafetida, as recommended by Sir Morell Mackenzie, is useful as a nerve tonic, to be taken a month or so before the hay season begins. Bromide of potassium and nux vomica will also allay nervous excitability. Antipyrin (ten grains twice a day) has been recommended as an anesthetic to the sensory and secretory nerves of the nose. A solution

of corrosive sublimate (1 : 3000) may be used as a preventive lotion, both to bathe the eyes and also for the nose, either as a spray or by mopping the nostrils with a pledget of cotton-wool. If not too sensitive, the nostrils may be plugged with cotton-wool saturated with the same solution. For the irritation of the eyes, a mild astringent collyrium (such as two grains of acetate of lead in an ounce of rose-water) will give relief. If the itching of the eyelids is troublesome, it will be well to bathe them with a solution of acetate of morphine (two grains to the ounce of water). A drop of a solution of morphine ($\frac{1}{4}$ gr.) and atropine ($\frac{1}{150}$ gr.), dissolved in thirty drops of water, placed in the eye at intervals will afford great relief. Tobacco-smoking is a useful preventive; cigarettes of cubebs are highly extolled by some. Ordinary anti-asthmatic remedies will be found most effectual to relieve the difficulty of breathing. Fumes of niter-paper or of stramonium should be inhaled; the latter may be used either as a dry powder, mixed with other dried herbs, or smoked in a cigarette. Treatment applied to the nose is the main indication in hay-fever, and with the exception of cocaine, all applications should be more or less astringent. A 10 or 20 per cent. solution of the hydrochlorate of cocaine is of service in allaying the irritation accompanying hay-fever, but it should not be too long persisted in. As it soon loses its effect, the strength must be increased, and the subsequent hyperemia leads to an aggravation of the symptoms. Cocaine may be applied either by a spray or on pledgets of cotton-wool. Cocaine lozenges (gr. $\frac{1}{10}$) may be sucked occasionally, especially to allay the itching in the roof of the mouth. Hollow nasal bougies containing cocaine are sometimes useful, but may be too irritating to the hypersensitive mucous membrane. As a substitute for cocaine, menthol (in 10 per cent. or 20 per cent. solution in almond oil, and applied in the same way as cocaine) may be used. An ointment of eucalyptus (one dram to an ounce of vaselin) is a useful sedative ointment.

Insufflations into the nose are sometimes useful. Morphine in some combination is the best powder to use. Acetate of morphine (gr. $\frac{1}{8}$ to $\frac{1}{4}$) may be used either with powdered starch (gr. $\frac{1}{2}$) or bismuth (gr. 1). In the same way ordinary snuff may be taken by men. Strong smelling-salts will sometimes ward off an attack, but only when the irritation is slight. A solution of chromic acid ($\frac{1}{18}$ grain to an ounce of water) is useful as an astringent. The whole interior of the nose should be freely swabbed, or the solution may be sprayed into the nostrils; the application is painful, and cocaine should be used.

In cases of hay fever the nose should be examined. Certain sensitive spots may be found which excite sneezing on the slightest irritation. These should be treated with the galvano-cautery. A deviation of the septum may require remedy; an exostosis or an enchondroma or excess of tissue, removal.

PATHOLOGICAL CHANGES PRODUCED BY TUBERCULIN.

AT the Congress of Internal Medicine, at Wiesbaden, ZIEGLER, of Freiburg (*Centralblatt f. allg. Path. u. path. Anat.*, Bd. ii., 1891), for Birch-Hirschfeld, presented a pathologico-anatomical discussion on—(1) The changes produced in tuberculous organs by the injection of tuberculin. (2) The question whether these changes led to the healing of the tubercle or to its diffusion or isolation within the tissues. (3) The extent to which previous investigations had proved the healing powers of the injections. He maintained that there can be no doubt that, as a result of the injection of tuberculin, inflammation is set up in the tissues separating and surrounding the tubercles. The degree of inflammation is variable, in some cases being limited to a simple effusion of serum, whilst in others there may be much cellular proliferation, or even suppuration. The inflammation may subside and its products be absorbed. The bacilli are not destroyed, even in the inflamed areas. If the tubercles be situated on the surface, they may be disintegrated and thrown off by the inflammatory process around them, ulcers being left in their stead. The bacilli are not all discharged with the tuberculous material, but may find their way into the neighboring lymph-passages. Tubercles situated beneath the surface, after being disintegrated by the inflammation around them, are either absorbed or encapsulated. The conversion of the tubercle into organized tissue is not possible so long as the bacilli within it are not destroyed, but if the tubercle be disintegrated and absorbed, it may be replaced by organized tissue. Absorption of disintegrated tubercle is, however, accompanied by absorption of the contained bacilli; these may find their way into the lymph-channels, the bloodvessels, or the air-passages, according to the situation of the tubercle. It is therefore reasonable to conclude that the disintegration of the tubercle may lead to the escape of bacilli, but it does not follow that this escape must in all cases give rise to the metastatic formation of tubercles. The bacilli may be rendered incapable of further development by the chemical or other properties of the tissues into which they have made their way. There is no reason to suppose that any immunity is conferred upon the tissues by the injection of tuberculin. If the tubercles become encapsulated, without resorption, even though they still contain bacilli, they are less harmful than those that undergo disintegration. That an actual process of healing is to be observed after the injections of tuberculin is undoubted, and may especially be noted in mucous membranes. It must not be forgotten, however, that inflammatory processes around and about tuberculous nodules are of very common occurrence. They are particularly well marked in intestinal tuberculosis, but may be seen also in the deeper parts of the lungs and other organs when resorption of the actual tubercle has taken place. The changes induced by tuberculin are, in fact, only those that may occur in the natural course of tubercle, but they are brought about more violently and more rapidly and in situations in which in the ordinary course of events they would never occur. Dr. Ziegler expressed the view that both the healing properties and the dangers of the injection-treatment have been overrated. In many of the cases under treatment in which the disease has increased a similar result would soon have occurred independently of the injections, but it is highly probable that in some cases the inflammatory changes following the injections have favored the spread of tubercle. Many observations go to prove that a marked development of bacilli may take place in tubercles undergoing this inflammatory disintegration,

and that in such cases the danger of the escape of bacilli into other tissues is considerable. The action of tuberculin is always limited, and in a case of diffuse tuberculosis is not universally manifest. It would appear that some special conditions of the peri-tuberculous tissues are requisite for the determination of the inflammatory changes. No instance has yet been observed in which as a direct result of the action of tuberculin a tuberculous nodule has become encapsulated.—*Supplement to the Brit. Med. Journ.*, June 27, 1891.

MEDICAL PROGRESS.

Traumatic Detachment of the Placenta.—BOGORODITZKY (*Proceedings of the Tambow Medical Society*, Nos. 9, 10 and 11, 1890) reports the case of a healthy woman, twenty years old, in the fourth month of pregnancy, who, one night, "for amusement," threw a somersault in bed. Immediately after, she was conscious of pain in the abdomen, which moderated, and the woman fell asleep. On the next morning, however, she awoke with increased pain, a feeling of weight in the abdomen and general prostration. Soon there set in obstinate constipation (that did not yield to enemata or purgatives), violent vomiting, fever, dysuria and retention of urine. Two weeks later she appeared anemic and collapsed; the pulse was quick and weak, the abdomen distended and tender, the uterus flabby, its fundus reaching about three fingers' breadth above the umbilicus, the cervix displaced backward, the os admitting a finger. Intra-uterine hemorrhage being diagnosticated, hot vaginal douches were given, an ice-bag applied to the abdomen, ice, stimulants and ergot administered. At the end of four hours a dead four-months' fetus was expelled; but the uterus remained as large as ever. On further examination, the organ was found to contain a smooth, globular body, of the consistency of the placenta. The membranes and placenta being ruptured, the finger entered an enormous cavity filled with an immense volume of fluid and clotted blood. After the removal of the membranes, clots and blood, the uterus contracted and hemorrhage ceased. The after-treatment consisted in hot, disinfectant irrigations and the internal administration of ergot and quinine. Notwithstanding the formidable loss of blood, an excellent recovery followed. On the fourth day the temperature was normal; on the tenth day the patient got out of bed.—*Provincial Medical Journal*, July 1, 1891.

Intravenous Injections of Soda in Anemia.—CASTELLINO (*Gaz. d. Ospit.*, No. 20), at the clinic of Maragliano, at Genoa, has studied in cases of anemia the results of intravenous injections of from fourteen to sixteen ounces of a ¾ per cent. filtered solution of soda. The injections were well borne, though sometimes followed by slight fever. An hour after the injection the number of red cells and the percentage of hemoglobin were reduced. This oligemia was transitory and proportional in degree to the quantity of fluid injected. At the end of from ten to twenty hours a decided increase in the number of blood-plaques and in the number and resistance of the red cells had taken place; the red corpuscles were, however, still pale; the hemometer detected little variation. In the course of four or five days the increase in the number of red cells became more conspicuous, the percentage of hemoglobin remaining stationary. During this period the red corpuscles showed greater resistance to the serum than they did previously. At the end of from thirty to forty days the good effects of the injections had disappeared. In three cases the serum, which before injection had, on spectroscopic examination, contained a considerable quantity of hematin, became clear after injection. In a case of chronic malarial fever of quotidian type the injection was followed by a decline of 2° in temperature. Good results attended the injections in a case of intense chloremia and in one of purpura simplex. In both, the number of red corpuscles became doubled, the general condition improved, and there was an increase in body-weight.—*Wiener klinische Wochenschr*, June 4, 1891.

Sacral Hysterectomy.—TERRIER (*Wiener med. Presse*, July 12, 1891), at the French Congress of Surgery, reported two cases in which he performed sacral hysterectomy. One was in a woman fifty-two years old, with extensive carcinoma of the body of the uterus, and with a narrow, resistant vagina. Vaginal extirpation was out of the question, so that the uterus was removed by the sacral method. The woman recovered without a recurrence of the neoplasm.

The second case, in a woman fifty years old, with intra-uterine carcinoma, terminated fatally. Terrier emphasizes the fact that the ureter is more likely to be injured in sacral than in vaginal or abdominal hysterectomy. He considers vaginal hysterectomy the normal operation, and the sacral method as indicated only when the vagina is narrow and not distensible, when the uterus is voluminous, and when lateral adhesions exist or the broad ligaments are carcinomatous. The operation is a difficult one.

ROUX considers the sacral operation only exceptionally indicated, to be reserved for massive carcinomata. By performing temporary resection of the sacrum, injury to the ureters is not possible. Of ten cases operated on, Roux has lost but one, in which a removal of portions of the bladder and ureter was necessary.

Congenital Rickets.—At a meeting of the Section on Orthopedic Surgery of the New York Academy of Medicine, DR. T. HALSTED MYERS presented a case of marked rickets, in which it was stated by the mother that the greatly enlarged epiphyses of the tibiæ, femora and radii were present when she first examined the child a few days after birth. The sternum at that time was also abnormally prominent. The mother had been in good health during the gestation; the father was also healthy. No specific history could be obtained. The child, six years of age, presented all the deformities of rickets in a marked degree, except that the head was well shaped and that there was a marked increase of the normal dorsal curve of the spine, rather than the dorso-lumbar kyphosis usually found in these cases. An unusual degree of permanent knee and hip-flexion also existed, and the patient, when resting, assumed the hand-to-knee position of Pott's disease. The epiphyseal tenderness seemed to indicate an active stage of the disease. After being nursed nine months, the child had a mixed diet, not especially starchy or lacking in animal fats.

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SATURDAY, AUGUST 15, 1891.

THE CONGRESS OF TUBERCULOSIS.

IN another part of the current number of THE NEWS will be found a preliminary report of the recent Congress of Tuberculosis, held at Paris. If there is one thing, above all others, to be learned from the many discussions upon the well-worn but still obscure subject of tuberculosis, it is that the bacillus alone does not constitute the disease. The host is obviously not the least important element. That human tuberculosis is not inoculable in all animals, and that all susceptible animals are not equally susceptible, must be a sufficient demonstration of this point. As the bacillus thrives well or ill on various artificial nutrient media, so in the animal organism does it require a suitable soil for its growth and development. What these conditions are, as well as what part the bacillus directly plays, and what influence the products of its vitality exert, we do not as yet know. These are all matters for further investigation.

PRUDDEN and HODENPYL (*New York Medical Journal*, June 6 and 20, 1891) have demonstrated that dead, sterilized tubercle bacilli injected into rabbits are capable of setting up a process apparently identical with miliary tuberculosis, but unattended with the retrograde changes that result in caseation and softening. We do know, however, that we can accomplish most in the treatment of tuberculosis by improvement of the general nutrition, and it is universally admitted that the accomplishment of this end is facilitated and promoted by a suitable selection of climate for residence.

We do not mean to belittle the significance of the bacillus of KOCH in the etiology of tuberculosis, but desire to emphasize the importance of other conditions that must be considered as concomitant and not as secondary or subordinate.

"The prophylaxis of tuberculosis must begin before birth." The system must be rendered impregnable to the invasion of a disease-agent that is practically omnipresent. The invasion once accomplished, the struggle is an unequal one; the enemy once intrenched, his expulsion is a matter of difficulty; the only hopeful means of conquest must be on the lines of physiological resistance. The soil must be rendered sterile. A healthy condition of tissues and fluids best fulfils the indication, in that it is antagonistic to bacterial growth and activity.

Not much, we fear, is to be expected from vaccination experiments. Tuberculosis, unlike smallpox and its congeners, is not a disease of which one attack confers immunity from subsequent attacks. On the contrary, one who has already had the disease shows a special predilection to reinfection.

EMPLOYMENT FOR THE INSANE.

A VISIT to an asylum for the insane is for a normally minded person one of the most distressing things in the world. And this is so not because of the evidences of aberration of mind, but largely or entirely because of the mental, moral and physical wrong done the poor souls there incarcerated by their enforced, continuous, maddening idleness. Hour after hour, day after day, week after week, month after month, they have nothing to do but to eat their own hearts. As a little outlet for mere physical energy, often pathologically superabundant, they can only pace back and forth like caged animals, or sit and sway their bodies and pursue the phantoms of their morbid imaginations. It is a horrible sight, and it is a marvellous thing that any recover. The simplest promptings of pity would dictate giving these uselessly busy fingers something useful to do, and furnishing these active minds some other occupation than that of feeding upon themselves. Could anyone resist morbidity of mind, and even insanity, if compelled to sit thus brooding and inactive for

years? What a prophylaxis is work against mental disease! There can be no question that some insane could not or would not do any work, but it is still more indubitable that to the vast majority proper work would be an inexpressible blessing and powerful adjuvant in treatment. The system would have to be instituted with care, guarding against cruelty, improper tasks, etc.; but because life has always been synonymous with activity and interest, such a system must fall in with the order of Nature, and finally yield beneficent results.

As an instance of the success of such a movement may be cited the "Hospice St. Jean de Dieu," at Dinan, France, where a marked peculiarity of the treatment of the insane is their judicious employment. A correspondent of the New York *Post* says of his visit to this hospital:

"I was especially impressed with the contentment (one might easily use a stronger word) visible in the faces of the many patients whom I saw busy in the quarry, and the orchards, and the hay-fields. (The grounds of the asylum cover 126 acres, and are worked almost entirely by the patients under the direction of the Brothers.) 'Yes, they are almost happy,' the Prior said in answer to my exclamation of surprise. 'A great number are peasants who have been accustomed all their lives to hard work, and whose condition would be seriously aggravated by idleness. Their contentment is the result of life in the open air, and of occupation which distracts their troubled thoughts, but most of all it comes from the sense of *being trusted*.'"

At Gheel, in Belgium, similar methods of treating the insane have long been in use. Dr. Wm. J. Morton, after a visit to this colony, says:

"Gheel teaches us the possibilities that exist in the treatment of the insane. It shows us that they will work cheerfully if well managed, and that they may be treated, under proper precautions, with great liberty, and not abuse it. It teaches us, moreover, how wofully wide our advanced civilization is from the mark it might attain to in the treatment of insanity."

And there is another phase of the matter that should not be lost sight of. All problems, whether of the mind, the body, or of society, have a financial aspect, and in our modern life this is fast becoming more and more dominant. When we ponder upon the ominous fact that the number of the victims of mental diseases is increasing faster than the general population; when we think that already in the United States we have about 100,000 insane[1] that are supported by public charity, and that the financial burden, amounting to many millions of dollars annually, is levied upon the sane workman outside of the hospitals—when we reflect upon these things we then see that to the mental, moral, and therapeutic injury done the patient by corroding idleness there is added a financial wrong done the community by the same patent and potent evil. By allowing the patient to contribute to his own support a double good would result, instead, as from the present system, a double wrong.

[1] An increase of about 60 per cent. in ten years!

REVIEWS.

FEVER: ITS PATHOLOGY AND TREATMENT BY ANTIPYRETICS. BEING AN ESSAY WHICH WAS AWARDED THE BOYLSTON PRIZE OF HARVARD UNIVERSITY, JULY, 1890. By HOBART AMORY HARE, M.D., B.Sc. Pp. 162. Philadelphia and London: F. A. Davis, 1891.

THE title originally adopted by Dr. Hare for this dissertation—*The Uses and Values of Antipyretics*—which we believe he was compelled to abandon in order to enter it for the Boylston Prize, far better describes its scope than that under which it is now published. It is, in reality, a description, from both the experimental and clinical standpoint, of the more modern antipyretics, based on laboratory and hospital investigations. The effects and utility of these antipyretics in the management of febrile and non-febrile ailments are detailed, and the published untoward results arising from their employment in various affections are cited and arranged in very convenient tabular form. The work, like all that proceeding from the fertile brain and pen of Dr. Hare, is well done. It furnishes a most excellent *résumé* of the physiological action and therapeutic uses of the drugs considered. We regret that it should be published with so misleading a title.

LECTURES ON TUMORS, FROM A CLINICAL STANDPOINT. By JOHN B. HAMILTON, M.D., LL.D., Professor of Principles of Surgery and Clinical Surgery, Rush Medical College, Chicago, etc. For the Use of Students. ("Physicians' Leisure Library.") Detroit, Michigan: George S. Davis, 1891.

THIS little work is one of a class of books that a conscientious critic greatly dislikes to review. Every page contains so many errors, both of fact and of methods of expressing facts, that little remains for the critic but general condemnation—and general condemnation is pleasant neither to give nor to receive. This is especially true in the present instance, in which the author's name would presumably have been a guarantee of better literary work, and that of the publisher a guarantee of typographical products not positively abominable. As instances of the latter class we cite a few words: "discrasia;" "a sarcomata;" "psammona;" "myroma: synonym, cartilaginous tumor;" "pelvic hæmotoma do not differ;" "pudenta and pudental;" "parenchymata;" "dernier resort;" "tic doloreux;" "usualy."

PLAIN TALKS ON MEDICAL ELECTRICITY AND BATTERIES. By HORATIO R. BIGELOW, M.D. Pp. 85. Philadelphia: P. Blakiston, Son & Co., 1891.

DR. BIGELOW'S *Plain Talks* consists of excerpts from the works of a number of recognized authorities on electricity. The author lays no claim to originality. The compilation as such is a good one, but the work suffers by contrast with the more original one of Adams. The therapeutic index, useful for ready reference, is the best feature of the book.

SOCIETY PROCEEDINGS.

SECOND CONGRESS OF TUBERCULOSIS,

Held in Paris from July 27 to August 2, 1891.

THE second Congress for the study of Tuberculosis in man and animals was officially opened on Monday, July 27th, at the Medical School of Paris, under the presidency of Dr. Villemin, who was the first to demonstrate experimentally the contagious character of tuberculosis. Among the members present were Pasteur, Charcot, Cornil, Brouardel, Lannelongue, L. H. Petit, etc.; Jacobi and Page, from the United States; Watson, from England; Semmola, from Italy; Metschnikoff, from Russia; in fact, every European country was well represented. In his opening address, President Villemin presented an historical sketch of tuberculosis, both clinical and bacteriological, mentioning the different treatments proposed during the last few years, and concluded by saying that for many years to come we shall have to be satisfied with partial success.

Prof. Verneuil then read a paper on "Emigration, or Change of Place of Residence, in the Prophylaxis or Treatment of Tuberculosis." The paper was arranged in a series of paragraphs, which can be summarized as follows: 1st. Change of residence has a decided influence on the development, rapidity, and termination both of medical and of surgical tuberculosis. 2d. The change may be either from the city to the country or from the country to cities; the former exerts a favorable influence upon the course of tuberculous disease, while the latter favors the appearance and progress of tuberculosis. 3d. These two facts, well established by clinical observation, are of capital importance as to the prophylaxis and treatment of tuberculosis. Dr. Verneuil insisted that the patient be informed by the physician that by sacrificing himself and not going to the country he will rapidly reach the end of his disease, while an early change of residence may entirely eradicate the trouble. It is not absolutely necessary that a patient be sent to the country; should he live in a large city he may be sent to a smaller city, the location and sanitary condition of which are better than the large and crowded city. A stay in the country is most serviceable in many forms of local surgical tuberculosis, such as ulcers, fistulæ, articular diseases; also in case of latent tuberculosis or of recent operation. When a patient has been sent from the city to reside in the country, he ought not to be allowed to return to his former residence before the results of a careful physical examination indicate that the return can be made with impunity. Unfortunately, fixed rules cannot be laid down, yet a change of residence made in childhood or in adolescence ought to be prolonged until adult life has been reached; a patient ought not to be allowed to return unless his disease has at least been stationary for some time, or has preferably undergone decided improvement.

As is well known, tuberculosis is much more common in cities than in the country. It is also much more rapid and serious in cities, and certainly does not subside in as large a proportion of cases and as rapidly as in the country; we in the city constantly see mild forms of tuberculosis that have a tendency to perpetuate themselves and to reach an alarming intensity, while the contrary is observed in the country; again, serious tuberculosis is almost always fatal in a city, but, in the country, cures have been reported; the average life of city tuberculous patients is certainly much lower than that of country tuberculous patients; finally, Verneuil concluded his communication by emphasizing the great service country physicians can render by forbidding tuberculous patients to live in cities while they still present the slightest evidence of tuberculous disease.

PROF. GRANCHER and DR. H. MARTIN next read a "Note on Anti-tuberculous Vaccination." They first passed in review the question of the duality of tubercle-bacilli, which has been a point of discussion for several years past; two kinds of tubercle bacilli are now cultivated: the human tubercle bacillus and the tubercle bacillus of birds. Koch admits that these two kinds of bacilli are different, but very slightly so; while MM. Straus and Gamaleia think that they are two absolutely different species; Cadiat, Gilbert and Roger believe in the unity of the bacilli. The experiments of Grancher and Martin have been made with both bacilli of birds and human bacilli; but the rabbit, which has been the animal experimented upon, is sensitive to both, and perhaps more so to that of birds than to that of man, so that, from a scientific point of view, the results as to immunity obtained against the most virulent of bird-tuberculosis by total or partial vaccination hold good for human tuberculosis. Grancher and Martin think that these bacilli are two varieties of one species. They are partial unicists.

The dualists base their opinion on the different aspects of the cultures; on the different pathogenic action of the two bacilli; on the immunity of the dog to the bird-bacillus and the immunity of the hen to the human bacillus.

As regards the cultures: Bird bacilli cultures, it is true, are often moist and soft and more or less wrinkled, while human bacilli cultures are dry and verrucous, but Grancher and Martin have often seen bird-bacilli cultures dry and verrucous and human bacilli cultivated on glycerin agar-agar soft and wrinkled; they have in their laboratory two fresh cultures of both bacilli which cannot be differentiated.

As regards the difference in the pathogenic action: With bird tubercle bacilli one can obtain any form of tuberculosis desired, from the infectious type of Yersin to the localized or benign tuberculosis of articulations.

As regards the immunity of the dog to bird-tuberculosis and of the hen to the human bacillus, this proposition falls to the ground, for hens have recently been infected with tubercle bacilli from human beings and dogs with bacilli from birds.

Grancher and Martin have conducted their experiments as follows: Rabbits weighing about two kilograms (4½ pounds) are for several weeks kept at the laboratory before being used. The same quantity of an opalescent culture in a little sterilized water is always used for inoculation; during the course of the experiment the vaccinated rabbits and the control-rabbits are given the same food, an important matter in such experiments. Each animal is weighed regularly every two or three days and the cage is kept clean and sterilized; even with these precautions small epidemics of enteritis and pneumonia are encountered, especially when animals are kept under observation for one or two years—and this long period is necessary if one wishes to learn the limits of the conferred immunity and not confuse partial with ultimate results; finally, the conclusive inoculation is made directly in the blood with the most virulent virus.

Grancher and Martin stated, as a curious and interesting fact, that as long ago as in 1888 they made experiments with a kind of "tuberculin" prepared by Martin, which somewhat resembled that of Koch; it was prepared as follows: A culture of tubercle bacilli in chicken broth with 6 per cent. of glycerin and 6 per cent. of sugar was filtered through clay. The filtered liquid is reduced to one-fourth of its volume by evaporation in a water-bath, and kept in a sterilizer at 120° C. (248° F.); the resulting liquid somewhat resembles "tuberculin" in its physical properties; it is also a glycerin extract of pure tuberculous cultures. All experiments made with the soluble products appeared to diminish rather than to increase the resistance of rabbits to the test-inoculation, so that these experimenters have given up further experiments with tuberculin to follow the antirabic inoculation method. Pasteur takes dried virulent cords; the authors have allowed their cultures to remain in tubes hermetically sealed, and in this manner the cultures become attenuated, and from month to month lose more and more of their virulence; these attenuations have been continued for a period of three years. A single injection of the virus, numbered ten, which is three years old, injected into the veins of a rabbit, is harmless. If the injection is several times repeated, the animal will die from tuberculosis.

The virus numbered one is from a fresh culture on glycerin agar, fifteen days old, which, injected into the veins of a rabbit weighing 2 kilograms, kills in from 15 to 20 days; sometimes the animal survives for 25 or 30 days, or it may die on the 11th or 12th. The lesions found are those described by Yersin.

The virus numbered two, three, and four, respectively injected, is fatal after a time that varies from 2 to 6 months; with that numbered five, six, and seven, death is not certain, but probable.

The following experiments were performed: On November 26, 1889, 9 rabbits were inoculated and 4 control rabbits were not. Each of the former received into the veins of the ear 1 c.c. of an opalescent dilution of tubercle bacilli, progressively more and more virulent. The 1st and 2d inoculations were made with a culture 33 months old; the 3d with a culture 22 months old, and so on, until all the rabbits were treated; the control-rabbits now, for the first time, received a culture of 4 months, corresponding to the virus numbered two. The four control-rabbits died, tuberculous, on the 23d, 27th, and 29th days after the test-inoculations, respectively, the last dying on the 154th day.

Of those vaccinated, one died, tuberculous, before the last inoculation was given; another died a few days after the last inoculation, while the others have lived a long time, some dying accidentally on July 19 and November 18, 1890, and January 29 and April 4, 1891. At the autopsy no trace of tuberculosis could be found, yet one rabbit was suffering from parenchymatous nephritis, while the last animal of this series still lived 21 months after the first vaccinal inoculation; he weighed 4.350 kilograms (9½ pounds), while his starting weight was 2.60 kilograms (4½ pounds).

It will be noticed that the control-animals died at variable periods—on the 23d, 27th, 29th, and 154th day of inoculation, yet they all received the same dose of the 4 months' old culture of the virus numbered two; this interesting fact is quite explicable, for if one had employed the pure fresh culture after a definite period, all these rabbits would have died almost on the same day; but the 4 months old culture had already been attenuated, and here comes into play the degree of resistance offered by each individual; and the idiosyncrasy of each animal has to be taken into account; one rabbit will resist for one month and another for six.

It will also be remarked that a rabbit died during vaccination and before the test-inoculation was made; this was due to the mode of inoculation employed; intravenous injection makes such complications possible, which are done away with, however, when the subcutaneous method is employed.

Another series of experiments by the subcutaneous method was begun on August 30, 1890. Each of 8 rabbits received 11 vaccinal inoculations until the virus numbered two was reached. Three that received, on December 8th, into the vein of the ear injections of human tuberculous virus, carefully admixed with the pulpified spleen of tuberculous guinea-pigs, remained in excellent health; they weighed 3.600 kgms., 3.500 kgms., and 3.800 kgms., each having gained 1000 grams. The control-animal died in the course of seven months, his body being stuffed with tubercles. This experiment proves that the bird-tubercletbacillus has the power of rendering the rabbit immune to the human bacillus.

In the first series of experiments, several of the rabbits died from intercurrent diseases, but no trace of tuberculous virus could be found, notwithstanding the enormous quantity of virus received.

One of the rabbits died from glomerulo-nephritis, which, according to Professor Grancher, is a very common affection in rabbits inoculated with tuberculous virus. Strange to say, the rabbits that die from that disease increase in weight after inoculation. In a series of 11 rabbits and 2 control-animals, the experiment being concluded on April 10th with an injection of the virus numbered one, the two control-animals died on the 3d and 10th of May respectively; while 8 of the others died from nephritis, without the slightest tuberculous lesion of either the kidney or any other organ; the three others died from pulmonary tuberculosis, but of a modified form; still all those rabbits lived for from 3 to 8 months, which certainly indicates that they had been favorably influenced by the virus.

Another interesting fact is that a vaccinated animal may

increase in weight from 2 kgms. to 3, 4, and 5 kgms., and die subsequently from a limited osseous or articular lesion; this enables Grancher and Martin to substantiate what they had already advanced, namely, that the longer the disease lasts the greater is its tendency to be benign and local.

Finally, the conclusions of this very interesting paper, the result of observations in eighty-two rabbits, is as follows:

Complete immunity to tuberculosis has not been conferred upon rabbits; the important fact has been determined that tuberculous virus has a vaccinal action against tuberculous virus itself.

Anti-tuberculous vaccination is imperfect, but does exist. Again, the tuberculous virus employed contains a vaccinal substance and a toxic one, the last being the cause of the nephritis developed, while the first confers a more or less prolonged immunity to infection. If the vaccinal virus have been varied, the results have varied, which is an indication of the efficacy of the virus employed.

The next communication made was by MM. ARLOING, RODET and COURMONT on, "Experimental Studies of the Properties Attributed to Koch's Tuberculin." These experimenters tested the three principal properties attributed to Koch's remedy—its curative value, its diagnostic value and its preventative property. They were unable to produce an acute intoxication, even by using large doses; on the contrary, frequently repeated small doses produced a sort of chronic intoxication.

A rise in the temperature is one of the most conspicuous symptoms; it is preceded, however, by a prodromic stage, which seems to indicate that this rise is not directly produced by tuberculin, but probably by a heat-producing substance, which gradually forms under the influence of tuberculin. As to its diagnostic value, experience has shown that it is not infallibly to be relied upon.

From a therapeutic point of view these authors have found Koch's remedy useless in the case of bird, bovine or human tuberculosis in animals. Finally, these experimenters attempted to verify the assertion of Koch, made at the International Medical Congress, that the guinea-pig was rendered immune to tuberculosis by treatment with tuberculin; they found, on the contrary, that in many cases the guinea-pigs were thus rendered much more susceptible to tuberculous lesions; in fact, that the lesions were much more confluent.

Finally, the day session was closed by a report of the librarian of the Faculty of Medicine of Paris, Dr. L. H. Petit, who is the General-Secretary of the Congress, and who gave a clear and interesting account of the work done and the results obtained by the last congress on tuberculous.

(To be continued.)

CORRESPONDENCE.

THE MEDICAL DEPARTMENT OF THE INTERNATIONAL ELECTRICAL EXHIBITION AT FRANKFORT-ON-THE-MAIN.

THE purpose of the International Electrical Exhibition at Frankfort-on-the-Main is to display all the latest advances and improvements in electrical science, and to stimulate to new efforts and further progress. The exhibition offers many points of interest, to medical nme in particular. In a hall built especially for medical and scientific purposes are to be seen the latest inventions in electro-diagnostic and electro-therapeutic appliances. It would be quite superfluous to go into the details of the exhibits, but it is worth while to take a cursory view of them.

The electromotor power of the various apparatuses is derived from many sources—from various kinds of galvanic batteries, from the currents produced by large dynamos, and from accumulators. Batteries of the latter kind are made of convenient size, and are easily transportable; they can be highly recommended for purposes of illumination, as they furnish a most constant light, and can at small outlay be introduced where no other arrangements for the production of electric light exist.

The contrivance of Dr. Bröse, of Berlin, first introduced last year, by which all medical instruments can be connected with the wires that conduct from the central station currents for illuminating or for mechanical power, is quite successful. The current enters the branch wire with a force of about 100 volts, and must, of course, be weakened for medical purposes. The weakening is accomplished by means of a rheostat that regulates the maximum current introduced into the circuit; by means of a second rheostat the current can be regulated to a nicety. In this manner a galvanic current of any intensity, from a fraction of one milliampère to several hundred milliampères, as may be needed for the purposes of electrolysis, can easily be obtained. The apparatus is perfect in action, and as it can be used without danger, there is no doubt that it has for medical purposes, a great future before it. The current is absolutely constant, and the disagreeable and inconvenient galvanic elements can now be dispensed with. The apparatus has also the great advantage that the cost is very small, and that it can be employed in any house in which electric lighting is in use.

The current from the central station may also be used for galvano-caustic purposes, and is most decidedly to be preferred to the current produced by elements.

Galvanic elements are exhibited in every conceivable form and in the highest degree of perfection, for the purposes of constant as well as inductive apparatus, electrolysis, galvano-caustic appliances, electric baths, and lighting.

The electromotors have been used in the medical section to provide the motive power for frictional machines, as well as for drilling-machines in the dentist's room.

The various lighting apparatuses, of which a great number is exhibited, claim particular attention. As especially worthy of notice may be mentioned the illuminating apparatus for investigating the cavities of the forehead and upper jaw, made in the smallest forms; it promises to be of great value in the diagnosis of tumors, as well as of accumulations of pathological collections in the cavities mentioned. Several dark-rooms have been prepared in order to test the apparatus.

It is needless to say that the latest improvements in galvanometers, rheostats, induction apparatus, etc., are to be seen.

As being particularly interesting, may be mentioned

the apparatus designed by Dr. Carl, a well-known oculist of this city, by means of which the refraction of the eye can be ascertained with great ease and in a short time. The instrument is so constructed that only single letters are seen. They appear in a vertical slit on a white disc, alternately in the upper and lower parts.

Quite apart from its great intellectual interest, the exhibition is worth a visit.

In the course of the summer, a congress of German physicians for nervous diseases will be held for the purpose of preparing the way for a purely scientific method of electro-therapeutic treatment.

NEW METHODIST HOSPITAL MEDICAL STAFF.

To the Editor of THE MEDICAL NEWS,

SIR: As many rumors have drifted to my ears concerning criticisms of the recent medical elections at the new Methodist Hospital, it seems but right to myself and to the hospital to make the following statement:

There were 30 candidates for the positions upon the medical staff, the schools of graduation being as follows: Woman's Medical College, 3; Jefferson Medical College, 3; University of Maryland, 2; University of Pennsylvania, 22.

Under the opinion given to the Board of Trustees by their solicitor, the will of Dr. Stewart, the founder of the hospital, required that no person should be elected upon the medical staff who did not have the title of A.B. from a college or university. As this title is one that is by almost universal custom only given after examination, it was not considered, by most of the trustees at least, that persons who had received the title from some small college by gift were within the limits contemplated by Dr. Stewart. The High School of this city has the legal right to give the title of A.B., but the solicitor did not consider that it could fairly be considered a college. Under this and other restrictions in the will of Dr. Stewart, not necessary here to detail, the trustees found that no candidates from the Woman's Medical College or the Jefferson Medical College were eligible, and that of the other candidates, only one coming from the University of Maryland and eleven from the University of Pennsylvania were within the terms of the will. Under these circumstances, they elected for physicians Drs. J. H. Lloyd, R. C. Norris, and F. A. Packard; for surgeons, John B. Roberts, H. R. Wharton, H. H. Kynett, and W. C. Hollopeter. One vacancy was left in the medical staff proper.

The above statements are based upon an analysis made by the Rev. Dr. McConnell, Secretary of the Board of Trustees, from information furnished in response to inquiries by the candidates themselves, and is, I think, entirely accurate, excepting in that Dr. John B. Roberts graduated at the Jefferson College before he took his degree at the University of Pennsylvania.

Yours truly,

H. C. WOOD, M.D.

1915 CHESTNUT ST, PHILADELPHIA, PA.,
July 18, 1891.

Dr. Victor C. Vaughan has been elected dean of the faculty of the medical department of the University of Michigan.

NEWS ITEMS.

Joseph Eastman, M.D., LL.D.—The degree of doctor of laws has been conferred by the Wabash College, of Crawfordsville, Ind., upon Dr. Joseph Eastman, president of the faculty and professor of the diseases of women and abdominal surgery in the Central College of Physicians and Surgeons, of Indianapolis.

Dr. Henry V. Wilson, recently in charge of the United States Fish Station at Wood's Holl, Massachusetts, has been elected professor of biology in the University of North Carolina. He will at the same time be Assistant Shell-fish Commissioner for the State, and scientific expert to the Commission.

Artificial Feeding of Infants.—The Société Médicale des Hôpitaux offers a prize of 1200 francs ($240) for the best essay upon the Artificial Feeding of Infants. Papers in competition must be in the hands of the secretary of the Society before the first of July, 1892.

Dr. H. M. Whelpley, professor of microscopy in the St. Louis College of Pharmacy, has been elected professor of physiology and histology, director of the histological laboratory and secretary of the Missouri Medical College.

The Alvarenga Prize for 1891, of the College of Physicians of Philadelphia, has been awarded to Dr. L. Duncan Bulkley, of New York, for his essay on Syphilis Insontium.

Nathan Bozeman, M.D., LL.D.—At its recent commencement the University of Alabama conferred the degree of doctor of laws upon Dr. Nathan Bozeman.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 4 TO AUGUST 10, 1891.

GIRARD, ALFRED C., *Major and Surgeon.*—Relieved from duty at Fort Niagara, N. Y., and ordered to Fort Sheridan, Ill., for duty.

SKINNER, JOHN O., *Captain and Assistant Surgeon.*—Assigned to duty at Fort Clark, Texas.

BRADLEY, ALFRED E., *First Lieutenant and Assistant Surgeon.*—Granted leave of absence for thirty days.

KNEEDLER, WILLIAM L., *Assistant Surgeon.*—The leave of absence granted is extended one month.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING AUGUST 8, 1891.

MARMION, R. A., *Surgeon.*—Detached from the Navy Yard, Norfolk, and ordered to the Navy Yard, Boston.

WINSLOW, G. F., *Surgeon.*—Detached from Marine Rendezvous, Boston, and ordered to the Navy Yard, Norfolk, Va.

PARKER, J. B., *Surgeon.*—Detached from the Navy Yard, Boston, and placed on waiting orders.

BRAITHWAITE, F. G., *Assistant Surgeon.*—Ordered to the Receiving-ship "Wabash," at the Navy Yard, Boston.

URIE, J. B., *Assistant Surgeon.*—Detached from the Receiving-ship "Wabash," and ordered to the Marine Rendezvous, Boston.

CORDEIRO, F. J. B., *Passed Assistant Surgeon.*—Detached from the Naval Hospital, Chelsea, Mass., and granted two months' leave of absence.

PICKERELL, G. McC., *Passed Assistant Surgeon.*—Detached from Hospital, New York, and ordered to Hospital, Chelsea.